MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

April 28, 1989

1609 Biddle
BASF North
Works
Wyandotte

TO: Ronda Hall
H.W. Permits Section, WMD

FROM: David Slayton
Geotechnical Unit, WMD

SUBJECT: BASF Corp. - North Works
Container Storage Area #1-Documentation of Closure
MID 064 197 742

I have reviewed the Documentation of Closure dated 11-8-88, and Al Taylor has also provided comments. In general, there is no data in this report which can be used to evaluate the effectiveness of the corrective actions underway pursuant to the 1985 Consent Decree.

The drum storage pad was built apparently in 1978. The company stopped using the pad in March 1987, and no longer uses it for hazardous waste storage. No decontamination of the pad has been done, and they claim it is closed based on visual inspections and a positive inspection done be MDNR in 1985. No sampling of the pad or soils around it was documented in this submittal, although there is reference made to soil samples taken in the vicinity.

BASF feels that Appendix B of the 1985 Consent Decree should represent a post-closure plan in addition to being their remediation plan. We disagree because the Consent Decree was not done under Act 64 or RCRA, there has been no attempt to clean close the pad, and no chemical monitoring of groundwater is required until the company wants to cease groundwater purging. Purging must continue at least 15 years, and ending purging requires three consecutive years of semi-annual analysis showing no problem. This Documentation of Closure we have does not have any proof contained in it that the groundwater purge system is working, and no chemical data is required until three years prior to termination.

Therefore, I think we should get a post-closure plan from the company that references the Consent Decree and provides us with annual reports on the status of the system (groundwater contour maps, volumes purged, any chemical analyses, etc.). Their "application" for a post-closure permit must contain enough information for us to evaluate the effectiveness of the current groundwater remediation action mandated by the 1985 Consent Decree. Specifically we'd like to see:

1. As built details, locations, well logs, and top of casings elevations for all peizometers and wells

pertinent to the groundwater purge system that affects the area of the storage pad.

2. Site specific scale map showing pad, wells, peizometers, groundwater contours, soil samplings locations.
3. Groundwater elevations data collected per the consent decree, and groundwater contour maps based on this actual data.
4. Soil borings logs near the pad.
5. Data and results of any permeability tests.
6. Geologic cross-sections.
7. Groundwater extraction volumes and rates.
8. A demonstration that the gradient of groundwater has been reversed as predicted in the remediation.

Conceptually, we should be Steve Buda's and Ken's blessing if we are going to allow this type of closure where nothing is done because there is a site wide cleanup going on. It may not be a bad way to go. The post-closure permit may have to be done regardless to satisfy Act 64 regulations, but it may be relatively simple by referring to the existing consent decree. They may only have to provide use data that should be going to another part of the DNR anyway.

Please contact me if there are questions.

cc: De Montgomery
Geotechnical file

DOCUMENTATION OF CLOSURE
CONTAINER STORAGE AREA

BASF CORPORATION - CHEMICALS DIVISION
1609 BIDDLE AVENUE
WYANDOTTE, MI 48192

NOVEMBER 8, 1988

NOVEMBER 8, 1988

I. SITE IDENTIFICATION

BASF Corporation, Chemicals Division
Wyandotte, Michigan Facility
1609 Biddle Avenue
Wyandotte, MI 48192
(313) 246-6106

EPA ID Number: MID 064197742
Generator/Storage Facility

General Manager of Facility: C.W. Axce
Quality & Ecology Services Manager: H. Dale Roush

II. INTRODUCTION

This document is intended to provide the necessary certification to the Michigan Department of Natural Resources - Waste Management Division (MDNR-WMD) to allow withdrawal of Interim Status for on-site storage of hazardous waste materials in excess of 90 days at the North Works of BASF Corporation, Chemicals Division (BASF) in Wyandotte, Michigan. BASF has previously provided MDNR-WMD with letters/affidavit statements to withdraw all items from their respective Part A application except for an outdoor hazardous waste container storage area. BASF considers this storage area closed (i.e., no longer active) and this document is being submitted to the MDNR-WMD to provide a chronicle of facts surrounding the subject storage area. The document will demonstrate that BASF is fully compliant with 40 CFR 265, Subpart G.

Although it was not practical for BASF to perform a "clean closure" of the subject container storage area, a post-closure plan was not developed for inclusion in this document. However, as mandated by state and Federal regulations, BASF is providing and will continue to provide the necessary care to insure that public health, welfare, and the environment are not endangered in any manner from the former hazardous waste storage area. BASF is approximately two years into implementation of a 30-year site remediation program persuant to a Consent Decree entered into the records of the U.S. District Court for the Eastern District of Michigan, Southern Division on November 12, 1985. This remediation program was designed to control conditions at the North Works site which could endanger public health, welfare, or the environment and take measures to prevent the flow of any contaminated groundwaters from the site to the Detroit River. Subsequent sections of this document discuss the details and requirements of the aforementioned Consent Decree.

Affidavit statements are also included herein (signed by BASF company officials) to certify that hazardous wastes are not presently located in the storage area, the area has not been utilized for management of hazardous wastes since March of 1987, and that the area is closed (i.e., no wastes will be stored there in the future).

In summary, this document provides a written record for the MDNR-WMD that BASF will insure the following conditions are met:

- All stored hazardous wastes have been removed from the subject storage area and have been properly disposed
- The storage area will not be utilized for hazardous waste management activities in the future
- The storage area does not constitute a current or future threat to public health, welfare, or the environment

III. HISTORY OF BASF's INTERIM STATUS

BASF's North Works complex in Wyandotte, Michigan occupies approximately 230 acres adjacent to the Detroit River. The complex is utilized for the manufacture of vitamins, urethane polyols, polyurethane plastics, polyurethane castings for automotive applications, and automobile windshield adhesives/sealants. Chemical manufacturing originated on the site in 1890 by the Michigan Alkali Company. In 1969 the company (which had been re-named Wyandotte Chemical Company) was purchased by BASF Aktiengesellschaft (a German corporation) and today is known as BASF America Corporation, Chemicals Division. Corporate headquarters are located in Parsippany, New Jersey.

The Wyandotte complex is illustrated in Figure I and consists of nine (9) separate facilities as listed below:

- Polyol Plant - Manufacture of urethane polyols
- Vitamin E Plant - Production of pharmaceutical and animal feed grades of Vitamin E
- Vitamin Powder Plant - Production of dry Vitamin A and E powders
- Elastocell Plant - Manufacture of cast polyurethane moldings for automotive applications
- Thermoplastic Polyurethanes Plant - Manufacture of polyurethane plastic material for various applications
- Windshield Adhesives Plant - Production of automobile windshield adhesives and sealants
- Corporate Research & Development Laboratories
- Administrative offices
- Small boiler installation for production of steam required to support the above operations

As with most large industrial facilities, manufacturing and research activities at the BASF North Works complex generate several types of hazardous waste materials. Prior to March of 1987, BASF would store some of these hazardous wastes on-site in containers until off-site shipment became practical from an economic perspective. Normal operations were to maintain the stored wastes (on occasion for more than a 90 day period) on a concrete pad located in the approximate center of the complex.

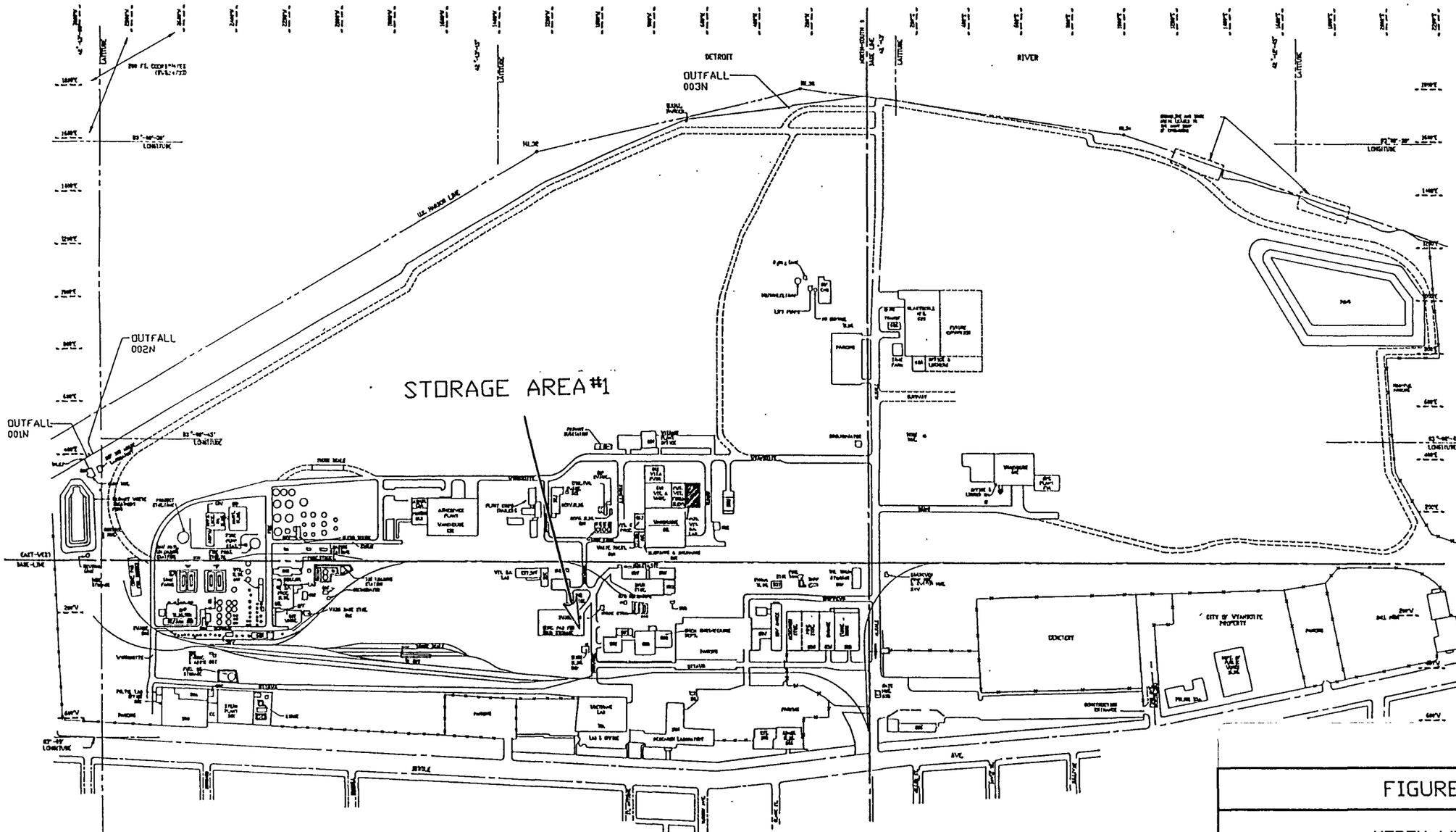

FIGURE I

NORTH WORKS

SITE PLAN

WYANDOTTE, MICHIGAN

BASF Corporation

DRAWING NUMBER 33364

REV. NO. 1

SCALE 1"=200'-0"

In November of 1980, BASF submitted Part A of a Treatment, Storage, and Disposal (TSD) permit application to the Environmental Protection Agency (EPA) persuant to the newly promulgated Resource Conservation and Recovery Act (RCRA). This application was a "protective filing" from BASF's perspective. All facilities/processes within the complex that were in any way associated with hazardous waste management were included on the application. As a result, the following items were submitted to the EPA on November 18, 1980:

- o 25,300 gallon capacity outdoor container storage area
- o 100 cubic yard capacity outdoor container storage area
- o 4,000 gallon aboveground storage tank
- o 2 MGD surface impoundment

On April 8, 1981, BASF sent a letter to the EPA to amend the Part A application. Deletion of the 2 MGD surface impoundment was requested since the normal flow to the impoundment was non-hazardous wastewater. BASF had included the impoundment on the original application because an accidental spill of hazardous waste material was contained in the impoundment prior to 1980 (see letter in Appendix A dated April 8, 1981). However, upon being provided with clarification of regulatory requirments, BASF determined that it was not necessary to include the impoundment in the Part A application. On August 6, 1981, BASF recieved confirmation from Mrs. Elizabeth Utley of the EPA, Region V that reference to the surface impoundment had been deleted as requested.

At the time of the November 18, 1980 Part A submittal, BASF had an incinerator on-site for the purpose of incinerating waste organic vapors generated as a by-product of production operations at the Graft Polyol facility. BASF inadvertantly did not include this fact on the application and therefore sent a completely revised Part A application to the EPA on June 25, 1981 which included the incinerator.

BASF was granted Interim Status by the EPA on June 10, 1982 to utilize the on-site incinerator as designed and to store hazardous wastes in three (3) areas of the North Works complex:

- o Container Storage Area #1 - 25,300 gallon capacity
- o Container Storage Area #2 - 100 cubic yard capacity
- o 4,000 gallon aboveground tank

Subsequent to submitting the revised TSD Part A application to include the incinerator, BASF determined that the waste vapors to be incinerated in the unit did not fit the definition of hazardous wastes under Michigan's Public Act 64. The MDNR concurred with this interpretation in June of 1982 (refer to letter from MDNR dated June 15, 1982 in Appendix A).

In addition to the above determination which indicated that the incinerator should not be included on the Part A application, use of the unit was discontinued prior to the date of the November 19, 1980 appplication submittal. BASF added the unit to the Part A application on June 25, 1981 in the event that it was ever recommissioned. However, due to continuous operating problems, BASF made a corporate decision in 1982 to permanently dismantle the incinerator. Demolition was completed in December of 1982.

On September 5, 1984 BASF requested by letter that the EPA omit the incinerator from their Part A application since it no longer existed. Through various investigative efforts BASF has determined that this request was granted, and BASF recieved written confirmation on the matter on October 13, 1988. Appendix A contains copies of correspondence between BASF/regulatory agencies regarding the incinerator's impact on the Part A application respective to the North Works complex.

BASF has recently determined that the 100 cubic yard capacity container storage area and the 4,000 gallon tank also should not have been included on the Part A application. As with the 2 MGD surface impoundment and the incinerator, these items should be deleted from the application

The hazardous waste container storage area designated on the application as having a 100 cubic yard capacity is a 6.5 foot by 26 foot long concrete pad located on the west side of the North Works complex adjacent to a storage building near the Reasearch & Development facilities. Past/present BASF practices are to utilize this area exclusively for temporary storage of hazardous wastes generated by chemical research, engineering, and analytical activities. Typically, the materials that have been and continue to be placed in this area are waste solvents from non-specific sources ("F" wastes) and ignitable wastes ("D" wastes). Since filing the Part A application in November of 1980, BASF has never stored hazardous wastes in this area for a period of time exceeding 90 days. All wastes placed on the pad have been (and continue to be) transported off-site to an appropriately licensed disposal facility within 90 days of the date when the material first began accumulating in the area.

The 4,000 gallon tank is an in-line component of BASF's Vitamin E manufacturing process. The acetic acid that accumulates in the tank is a by-product of this process. The acid is not contaminated with residual chemical constituents (i.e., heavy metals) to the extent that it is unusable. Normal BASF practice is to sell the acetic acid to a buyer who utilizes the material "as received" during the processing of cement.

When this procedure is followed, the acetic acid does not meet the definition of "solid waste" provided in Michigan's Public Act 64 or in 40 CFR 261.2 since the material is not discarded.

Only four (4) times in the past eight (8) years has the subject tank become full of acetic acid when BASF did not have a party available to purchase the material. On these occasions the tank was completely emptied, the liquid was manifested as a hazardous waste, and transported off-site to an approved neutralization/disposal facility. BASF attests that at no time could acetic acid have accumulated in the tank for a period of time exceeding 90 days. The Vitamin E manufacturing process is a continously operated system and acetic acid is generated at a rate of approximately 185 gallons/operating day. This flow rate is sufficient to fill the 4,000 gallon tank to full capacity in approximately 22 operating days. If the tank becomes full, process operators are required to shut down the system (a condition considered highly undesirable by BASF).

Since November 1987, a one-inch diameter process waste pipe has been connected from the subject tank to a neutralization vessel. When a buyer is not available, the acetic acid is pumped to the neutralization vessel, the pH is adjusted, and the resultant solution is discharged to the sanitary sewer (with permission from the local wastewater authority). Under these conditions, the waste acid is disposed of through a industrial wastewater pretreatment process discharging to a POTW via a sanitary sewer. As such, disposal of the acid is regulated under the Clean Water Act and RCRA requirements are not applicable.

On October 11, 1988, BASF sent a letter and affidavit statements regarding the 100 cubic yard storage area and the 4,000 gallon tank to the MDNR-WMD. This correspondence requested that BASF's Part A application be amended by deleting reference to the two items described above. BASF certifies that the information conveyed in the letter and the above paragraphs is true, accurate, and complete (see letter/affidavit statements in Appendix A).

Upon deletion of the 100 cubic yard storage area and the 4,000 gallon tank from BASF's Part A application forms, the only hazardous waste management unit at the site is the 25,300 gallon capacity container storage area (i.e., Storage Area #1).

IV. History of Storage Area #1

In May of 1978, BASF constructed a 100 foot by 178 foot long concrete pad slightly northeast of where the Corporate Research & Development facilities are located (refer to Figure I). This pad was designed for outdoor storage of various materials. Until March of 1987, BASF utilized the southwest portion of the pad for storage of fifty-five gallon drums of hazardous waste. Drums of hazardous wastes were occasionally stored in this area for periods of time that exceeded 90 days, however, no spills or leaks were ever documented as occurring on the concrete pad.

NOTE: Since March 25, 1987, BASF has not stored hazardous waste material on-site at the North Works complex for more than 90 days. Present BASF policy is to place containers of hazardous wastes generated on-site in a warehouse located next to Alkali Street (south of Storage Area #1). This area complies with requirements for less than 90 day storage of hazardous waste specified in 40 CFR 262.34 and R299.9306 of Michigan's Act 64.

The portion of the concrete pad designated as Storage Area #1 is approximately 75 foot by 75 foot long and is enclosed on three sides by 6 inch high x 4 inch wide concrete curbing. A 3 foot by 3 foot by 2 foot deep sump is located at the west side of the storage area for collection of rainwater runoff or any potential spills from within the area.

The maximum theoretical number of drums that could be maintained in the subject storage area is approximately 460 (this subject is addressed in more detail in Section VI, Item 2). Numerous types of organic wastes were placed on the pad during the course of its active life (see Table I).

In 1981, the MDNR initiated an investigation to ascertain the presence of chemical compounds in the soil sediments, surface waters, and groundwater aquifers of the North Works complex. A confirmation was subsequently made regarding the presence of inorganic/organic compounds in soil samples and groundwater samples obtained from several locations at the site. The MDNR asserted that chemicals were leaching from site soils into site groundwaters, resulting in a threat to public health, welfare, and the environment due to chemical migration off of the North Works complex via the Detroit River.

Upon completion of the MDNR investigation, the State of Michigan initiated a complaint against BASF on October 31, 1983 in the U.S. District Court for the Eastern District of Michigan - Southern Division. Civil Action #83-CV-4712-DT asserted that since BASF owned and operated the site, BASF was responsible to reimburse the State of Michigan for expenses incurred during the site investigation, to take appropriate action to prevent further degradation of the site, and to abate any conditions which could endanger public health, welfare, or the environment due to the presence of chemical compounds in site soils and groundwaters.

TABLE 1

TYPES OF HAZARDOUS WASTES MANAGED AT STORAGE AREA #1

WASTE CODE	DESCRIPTION OF WASTE
D001	IGNITABLE WASTE
D002	CORROSIVE WASTE
D003	REACTIVE WASTE
F001	SPENT HALOGENATED SOLVENTS USED FOR DEGREASING OPERATIONS
F002	SPENT HALOGENATED SOLVENTS
F003	SPENT IGNITABLE NON-HALOGENATED SOLVENTS
F005	SPENT TOXIC NON-HALOGENATED SOLVENTS
U009	WASTE ACRYLONITRILE
U037	WASTE CLOROBENZENE
U044	WASTE CHLOROFORM
U121	WASTE TRICHLOROFLOROMETHANE
U210	WASTE CARBON TETRACHLORIDE
U221	WASTE TOLUENE DIAMINE
U223	WASTE TOLUENE DIISOCYANATE
123U	WASTE METHANOIC (FORMIC) ACID
131U	WASTE STYRENE
019L	WASTE COOLANTS/WATER SOLUBLE OILS
020L	WASTE LUBRICATING OIL
021L	OTHER WASTE OIL (MISCELLANEOUS)
025L	WASTE MIXED OIL RESIDUE
029L	OTHER LIQUID WASTE (MISCELLANEOUS)

After substantial negotiation, BASF and the State of Michigan developed and agreed to the conditions of Consent Decree #80-73699. This document was entered in the above mentioned court on November 12, 1985. The purpose of the Consent Decree was to establish that BASF would, at its own expense, prevent the flow of groundwaters from the site to the Detroit River (thereby mitigating any respective threat to public health, welfare, or the environment). Specifically, BASF was to execute the following tasks in order to comply with the requirements of the Consent Decree:

- Conduct an appropriate geotechnical study to ascertain the existing flow gradient and direction(s) of site groundwaters
- Install groundwater extraction wells/piezometers in locations identified by the geotechnical study to reverse groundwater gradients, thereby insuring that groundwaters will not leave the site via the Detroit River
- Treat all extracted groundwaters in an approved treatment system to remove specific chemical compounds (an activated carbon adsorption system was subsequently approved by applicable regulatory agencies)
- Discharge treated groundwater to the Wayne County Department of Public Works' Wastewater Treatment Plant via the public santiary sewer system in accordance with a permit specifically prepared for the circumstances (see Appendix E)
- Continue extraction/treatment of site groundwaters for a period of 30 years unless it can be demonstrated that the corrective actions instituted by BASF have reduced the concentrations of chemical compounds in groundwater aquafers to acceptable levels.

The terms of the Consent Decree further mandate that BASF will not be able to appeal any remediation requirements until January of 2002. In January of 2012 BASF is to begin collecting chemical data on the groundwater influent to the activated carbon adsorption system for the next five (5) years. The State of Michigan will regularly examine the data collected over that period. Depending upon the quality of the groundwater in 2017, BASF may be allowed to discontinue the extraction/treatment process. However, if the data indicate that significant concentrations of chemical compounds remain in the influent to the treatment system, BASF may be required to continue ground water extraction/treatment for a period of time to be determined.

V. Closure of Storage Area #1

State and Federal regulatory requirements mandate that closure of a hazardous waste storage facility must insure that soils and groundwater aquifers are left in their original condition (i.e., the state that they were in prior to conducting hazardous waste management activities at the site). Typically, this requires undertaking an extensive sampling and analytical program to determine background conditions, followed by a similar program to ascertain whether any contaminants are present at the site. If contaminants are determined to be above background conditions, clean-up activities must be conducted to remove all contaminated soils/residual materials. If all contaminants cannot be removed, a written plan outlining 30-years of post-closure care and groundwater monitoring must be developed, approved by the MDNR-WMD, and implemented.

As indicated earlier, chemical manufacturing operations have been conducted at the North Works site since the late 1800's. The historical use of the site would make it extremely difficult, if not impossible, to establish background conditions.

BASF concurs with the 1981 site investigation undertaken by the MDNR regarding the presence of chemical compounds in soils and groundwaters near the subject container storage area. Paragraphs 21-36 and Exhibit C of Civil Action #83-CV-4712-DT (see Appendix C) contain MDNR compiled data regarding concentration levels for chemical compounds in samples from specific locations of the North Works complex. Since a detailed data base regarding site conditions currently exists in MDNR files, further analysis of samples obtained from near Storage Area #1 is not necessary. The fact that chemical compounds are present in soils and groundwaters of the North Works complex is a matter of public record.

As indicated earlier in this document, Storage Area #1 is no longer active and has not been utilized for management of containers of hazardous waste since March of 1987. Appendix B contains an affidavit statement signed by representatives of BASF that the last drum of hazardous waste was removed from the storage area on March 25, 1987.

BASF believes that decontamination of the concrete pad at the subject storage area is not necessary. Residual hazardous wastes from spills or leaks are not present and the concrete pad has a clean appearance (see letter dated December 30, 1985 from Margaret Field's of MDNR in Appendix A). The types of hazardous wastes stored on the pad during the period of active use were organic solvents/ignitable liquid wastes with relatively high vapor pressures (i.e, volatile materials). In the event that any of these materials had spilled or leaked onto the pad they would no longer be present due to complete volatilization. The storage pad is exposed to the elements, causing the concrete to possess substantially elevated temperatures during summer months.

Based on the past use of Storage Area #1 as a designated hazardous waste storage area and because "clean-closure" is not possible, the area is subject to 30-years of post-closure care and groundwater monitoring per 40 CFR 265.117. However, implementation of a 30-year post-closure program for the storage area that is parallel to the 30-year remedial action program currently underway pursuant to the 1985 Consent Decree is not necessary. BASF believes that the requirements of the existing site remediation program are sufficient to satisfy the majority of the post-closure requirements outlined in 40 CFR 265.116 through 40 CFR 265.120. The terms of the Consent Decree were developed with rigorous input from various departments of the MDNR and the requirements of the document are identical (in some instances more stringent) to RCRA requirements for post-closure care and groundwater monitoring.

Any post-closure requirements mandated by 40 CFR 265, Subpart G that are not adequately addressed by the 1985 Consent Decree are discussed in Section VI.

VI. Regulatory Requirements for Closure of Storage Area #1

Due to requirements specified in the 1985 Consent Decree, BASF has taken substantial measures to insure that public health, welfare, and the environment are protected from any chemical compounds that may be at or beneath the North Works complex. These actions directly impact Storage Area #1 since the area is centrally located between groundwater extraction systems A and B (see Figures II, III, IV, and V).

This section provides documentation that BASF's closure of the subject storage area is fully compliant with the regulatory requirements for hazardous waste management units specified in 40 CFR 265 Subpart G. Applicable paragraphs of the regulation are specified below, followed by a description of the method/procedures that BASF has utilized to insure compliance with the respective requirement.

1) 40 CFR 265.112 - Steps Necessary for Closure

Storage Area #1 at BASF's North Works complex has been closed since March of 1987. There are no hazardous waste materials to remove from the storage area as the last container in the area was transported offsite for disposal on March 25, 1987 (see Appendix B).

The pad at the storage area does not require cleaning. No documented spills or leaks ever occurred in the area. The respective concrete pad is in very good condition as noted in the December 30, 1985 letter from Margaret Field's of MDNR (Appendix A). No oily residues are present and BASF believes that any organic materials that may have been inadvertantly released on the pad have completely volatilized over the past 20 month period.

2) 40 CFR 265.112(a)(2) - Estimate of Maximum Waste Inventory

Storage Area #1 is listed on BASF's Part A application as able to contain a capacity of 25,300 gallons. This corresponds to 460 fifty-five gallon containers. This figure was calculated as follows:

> Based upon the diameter of a standard fifty-five gallon drum, approximately 230 standard drums could fit in the available space of the storage area (5625 square feet). Normal drum storage practices at most industrial/warehouse facilities (including BASF) is to stack containers two (2) tiers high.

BASF attests that the subject storage area was never utilized to contain the number of containers calculated in the above paragraph. 460 drums could only fit into the available space in the subject

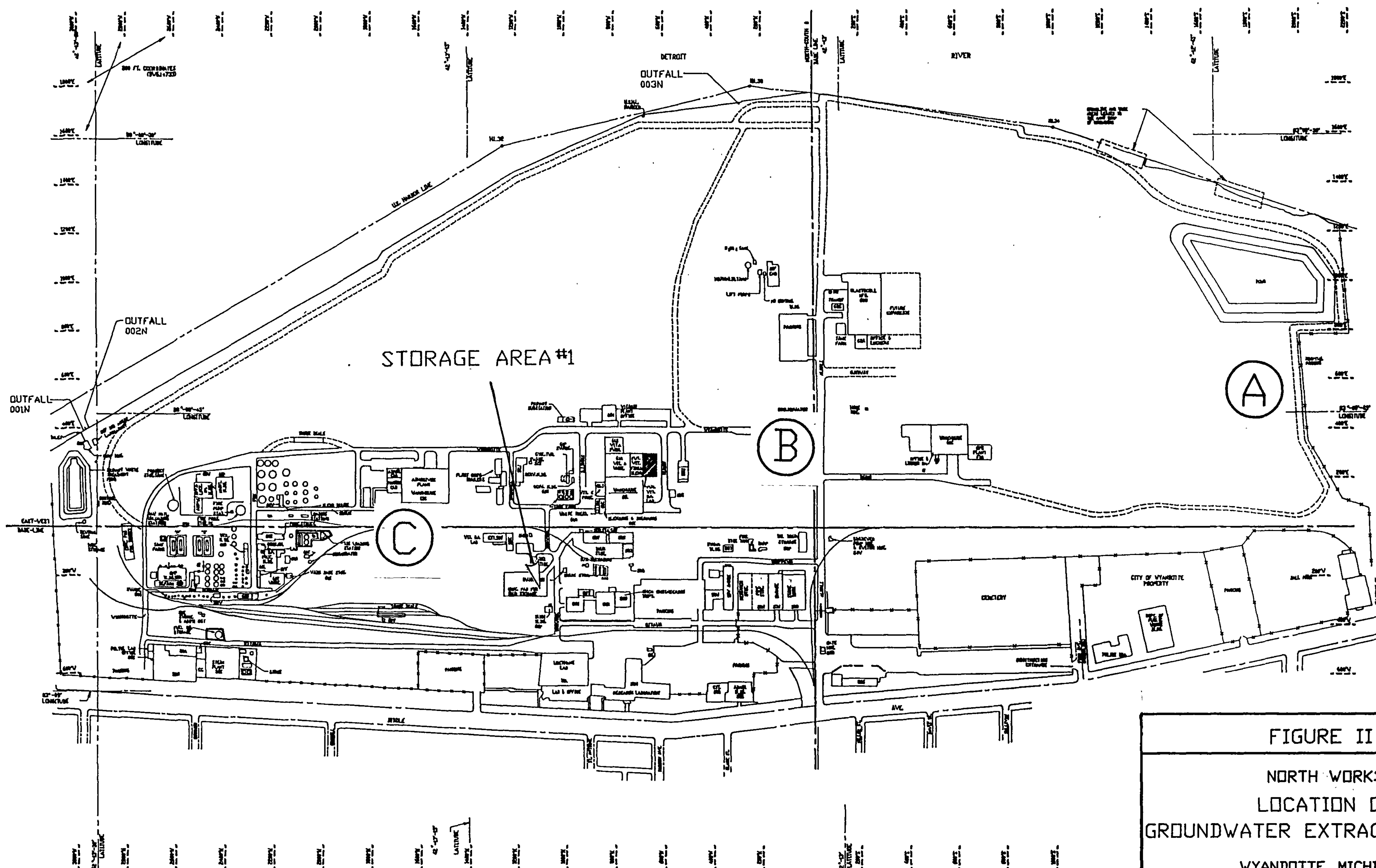

FIGURE II

NORTH WORKS
LOCATION OF
GROUNDWATER EXTRACTION SYSTEMS

WYANDOTTE, MICHIGAN

BASF Corporation	SCALE 1"=200'-0"	33364	1

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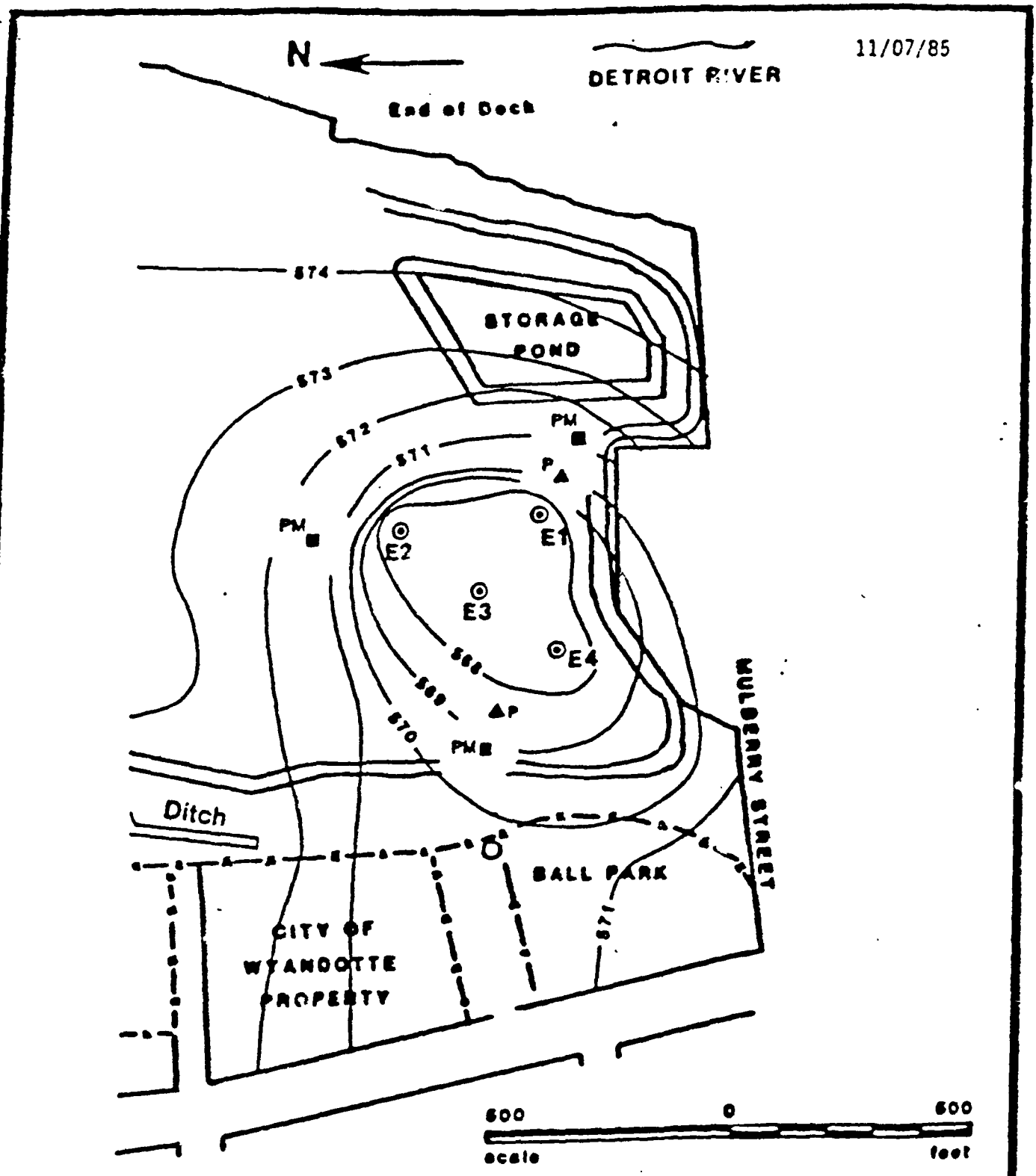
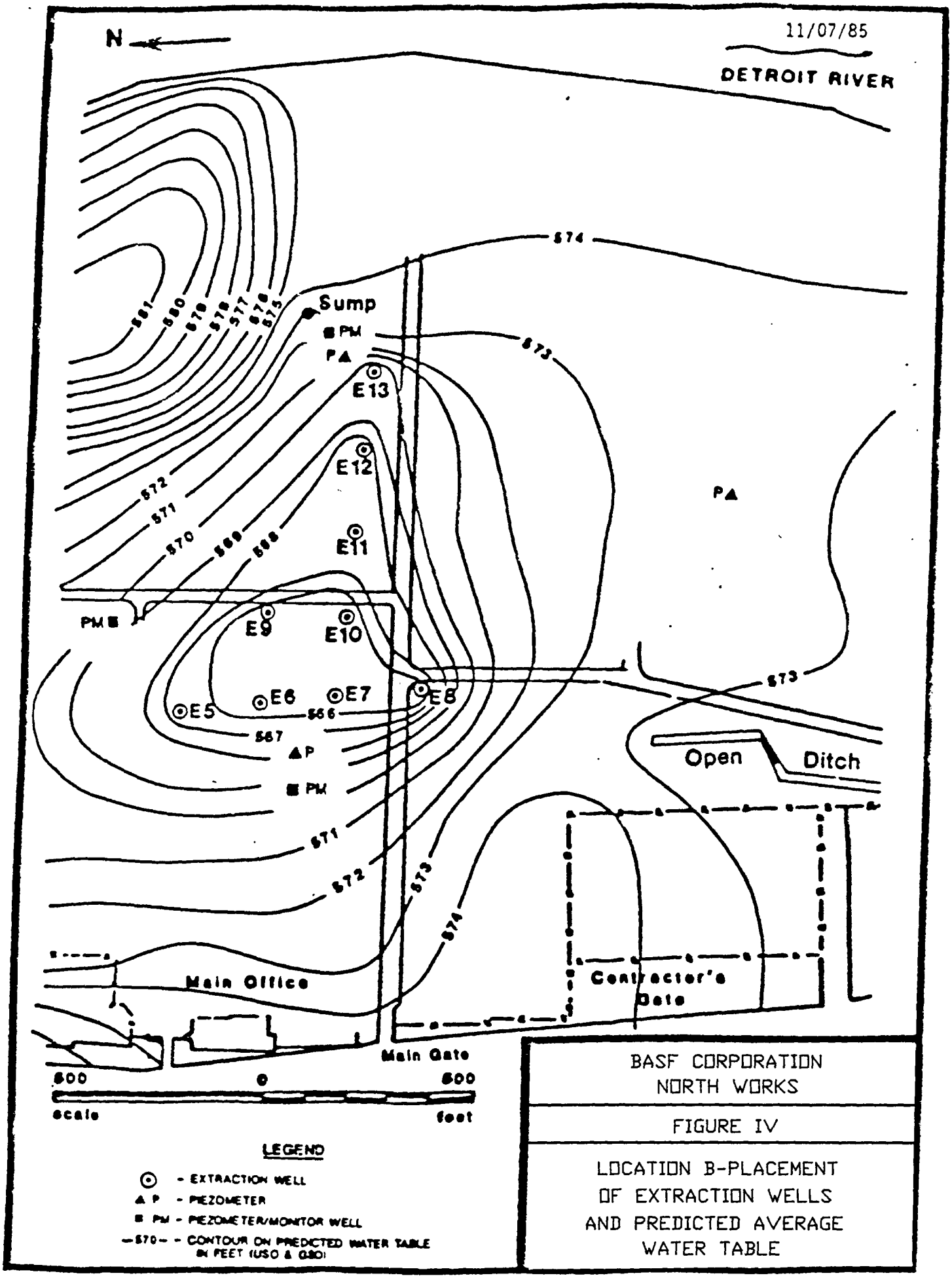


BASF CORPORATION
NORTH WORKS

FIGURE III

LOCATION & PLACEMENT OF EXTRACTION WELLS AND PREDICTED AVERAGE WATER TABLE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11/07/85
DETROIT RIVER
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571
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569
568
Sump
PM
P
E13
E12
E11
E10
E9
E8
E7
E6
E5
566
567
Open Ditch
Main Office
Contractor's Gate
Main Gate
500
0
500
scale
feet
LEGEND
⊙ - EXTRACTION WELL
▲ P - PIEZOMETER
■ PM - PIEZOMETER/MONITOR WELL
—570— - CONTOUR ON PREDICTED WATER TABLE IN FEET (USD & GSD)
BASF CORPORATION
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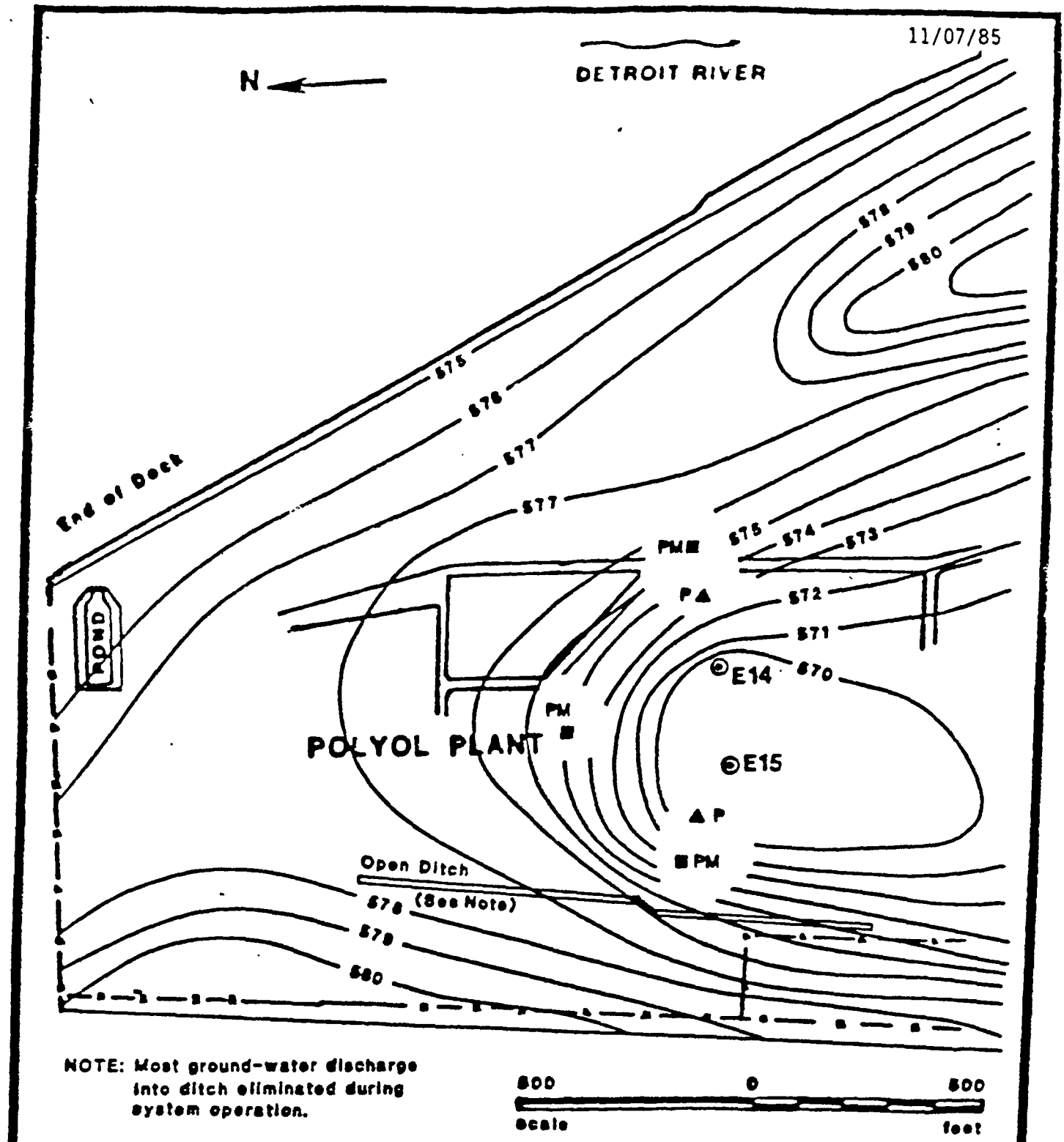
FIGURE IV
LOCATION B-PLACEMENT OF EXTRACTION WELLS AND PREDICTED AVERAGE WATER TABLE



BASF CORPORATION
NORTH WORKS

FIGURE V

LOCATION C-PLACEMENT OF EXTRACTION WELLS AND PREDICTED AVERAGE WATER TABLE

storage area if they were placed immediately adjacent to each other. Since sufficient space was maintained on the pad to allow lift truck access, approximately 240 drums is a more accurate reflection of the maximum number of containers that could be maintained on the storage pad at any one time.

3) 40 CFR 265.112(a)(4) - Schedule for Closure

As mentioned in Item (1) above, the subject storage area has been closed since March of 1987. The last container stored in the area was shipped offsite for disposal on March 25, 1987 (see Appendix B). Development of a schedule for closure is therefore not pertinent to this document.

4) 40 CFR 265.117 - 30 Year Post-Closure Care Period

Chemical compounds are known to be present in the soils/groundwaters adjacent to the concrete pad at Storage Area #1. The area is part of the North Works complex and the 1981 MDNR investigation determined that soils at many locations of the complex contain chemical compounds. The study also concluded that groundwaters under the entire site contain measurable concentrations of various chemicals. It would not be practical for BASF to remove all soils at the storage area that contain chemical residues since it would be impossible to make a determination of where to discontinue excavation, treatment, or removal.

Because of the situation described above BASF is not able to certify "clean closure" of the subject storage area. 40 CFR 265.111 and 40 CFR 265.117 mandate that where "clean closure" is not possible, the owner/operator must take necessary precautions to protect public health, welfare, and the environment from threats due to residual materials from the former hazardous waste management facility. Typically, this requires preparation of a written post-closure plan, approval of the plan by the MDNR, and implementation of the plan for up to a 30-year period.

BASF believes that Appendix B of the 1985 Consent Decree (refer to Appendix D) meets the requirements for a written post-closure plan applicable to the North Works complex. The fact that this document was prepared with MDNR input and entered into the records of a U.S. District Court implies that the plan has been approved by the MDNR.

As mandated by the remedial action program of the Consent Decree, BASF has implemented an extensive groundwater extraction/treatment system to insure that the threats to public health, welfare, and the

environment via groundwater flow from the North Works site to the Detroit River have been eliminated. The extraction system has totally reversed the natural flow of groundwater toward the river. Figure VI graphically illustrates groundwater levels at the site and the cones of depression caused by the extraction wells at Locations A, B, and C.

BASF invited Mr. Roy Schrameck (District Engineer) and Ms. Cathy Morse (Surface Water Quality Division) of the MDNR-Northville offices to visit the North Works site on March 23, 1988. Data regarding the groundwater extraction/treatment system was discussed in detail at this meeting and the MDNR representatives were satisfied with BASF's performance in complying with the requirements of the Consent Decree.

Unauthorized access to the BASF site is controlled by fences, security guards at entry gates, security guards who patrol the site after regular working hours, and the Detroit River on the west side. BASF plans to continue to conduct manufacturing operations on the site well into the future, and these security measures will remain in place throughout the duration of the 30 year Consent Decree period.

BASF regularly perfoms inspections of the groundwater extraction equipment and activated carbon adsorption system. This task is also mandated by Appendix B of the 1985 Consent Decree.

The following individual has been designated as the BASF coordinator to address all inquiries, reports, notices, or documents regarding the 1985 Consent Decree:

Mr. C.W. Axce, General Manager
BASF Corporation - Chemicals Division
1609 Biddle Avenue
Wyandotte, Michigan 48192 (313) 246-6100

BASF will maintain an copy of this Closure Document for the duration of the remedial action period. The document will be updated should any change occur which impacts the accuracy of its contents.

5) 40 CFR 265.119 - Notification of Local Land Authority

BASF will prepare a survey plat for submittal to the MDNR and the local land authority prior to January 8, 1989. This document will illustrate the location of Storage Area #1 and will list the chemical compounds found to be present at the property during the 1981 MDNR investigation. A note will be included stating that future use of the property must be compliant with the conditions of 40 CFR 265.117(c). The plat will be certified by a registered land surveyor.

NORTH WORKS GROUNDWATER LEVEL

BASF CORPORATION

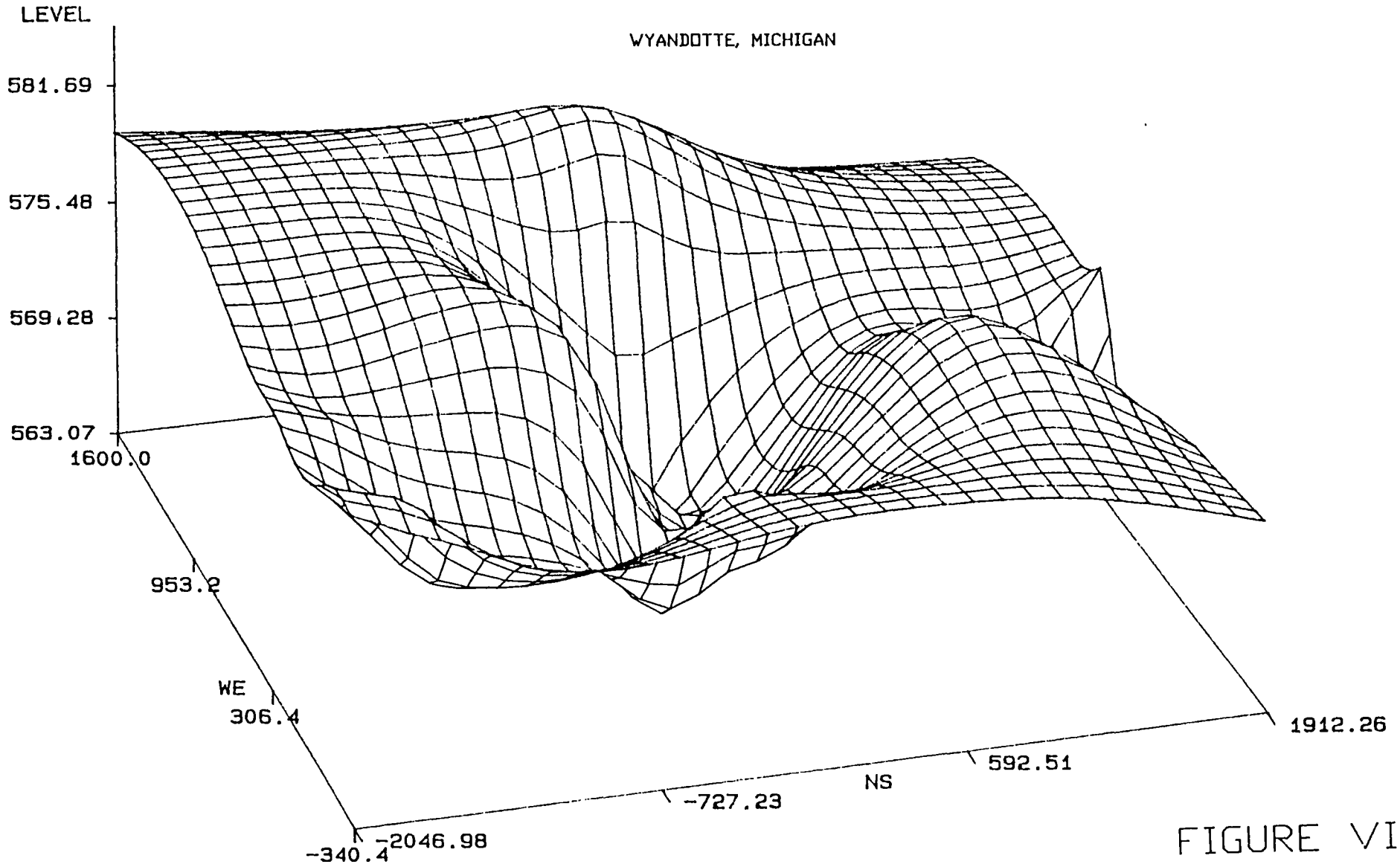


FIGURE VI

BASF will also insure that the property deed applicable to the site be modified or permanently associated with a note which states that management of hazardous waste was conducted on the site in the past and that future use of the property must be compliant with the conditions of 40 CFR 265.117(c). A copy of this document will be provided to the MDNR prior to January 8, 1989.

6) 40 CFR 265.132 - Cost Estimate for Closure

As mentioned in Item (1) above, Storage Area #1 has been closed since March of 1987. The last container stored in the area was transported offsite for disposal on March 25, 1987 (Appendix B). Development of a cost estimate to execute closure of the subject storage area is therefore not pertinent to this document.

7) 40 CFR 265.144 - Estimate of Annual Cost of Post-Closure Care

The cost of operating the groundwater extraction equipment and carbon adsorption system is projected to approximate $600,000 for calendar year 1988. This figure includes the cost of all materials to maintain the system, labor, monitoring/analysis of groundwater conditions, and administrative costs to continue satisfactory operation of the system. Barring unforseen complications, BASF anticipates that the approximate annual cost (in 1988 dollars) to maintain operation of the groundwater remediation system for the period mandated by the 1985 Consent Decree will remain near $600,000.

BASF Corporation is financially prepared to continue expenditures of this magnitude, if necessary, until 2017. Appendix F contains a letter addressed to the MDNR from the Chief Financial Officer of BASF Corporation to demonstrate the corporation's ability to be financially responsible for hazardous waste activities at its facilities (note lines 4-10 on page 6 of the letter).

As indicated in Item (4) above, this section will be appropriately modified should any post-closure changes occur which would cause the above information to be inaccurate or misleading.

APPENDIX A

APPLICABLE CORRESPONDENCE BETWEEN BASF/REGULATORY AGENCIES

P29 2144563

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Permit Contact (5EPO)
U.S. EPA
230 Dearborn Street
Chicago, Il. 60604

POSTAGE	$ .11
CERTIFIED FEE	80 ¢
SPECIAL DELIVERY	¢
RESTRICTED DELIVERY	¢
CONSULT POSTMASTER FOR FEES	¢
OPTIONAL SERVICES: RETURN RECEIPT SERVICE	55 ¢
SHOW TO WHOM AND DATE DELIVERED	¢
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY	¢
TOTAL POSTAGE AND FEES	$ 1.76

POSTMARK OR DATE

PS Form 3800, Apr. 1976 RCRA Permit - Wyandotte

PS Form 3811, Jan. 1979

● SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
- ☐ Show to whom and date delivered ..... ¢
- ☒ Show to whom, date and address of delivery.... ¢
- ☐ RESTRICTED DELIVERY
  Show to whom and date delivered ..... ¢
- ☐ RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery. $ ____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Permit Contact (5EPO)
U.S. EPA
230 South Dearborn Street
Chicago, Ill. 60604

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P29 2144563	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

4. DATE OF DELIVERY NOV 21 1980 POSTMARK

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

RECEIVED NOV 21 1980 U.S. ENVIRONMENTAL PROTECTION AGENCY

RCRA Permit Wyandotte RETURN RECEIPT REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-288-047

CONTINUED FROM THE FRONT

II. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
2819 (specify) Industrial Inorganic chemicals	2821 (specify) Synthetic resins
C. THIRD	**D. FOURTH**
2833 (specify) Medicinal chemicals	(specify)

III. OPERATOR INFORMATION

A. NAME: BASF WYANDOTTE CORP.

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL; S = STATE; P = PRIVATE; M = PUBLIC (other than federal or state); O = OTHER (specify)
P (specify)

D. PHONE (area code & no.): A 201 263 3400

E. STREET OR P.O. BOX: P.O. Box 181

F. CITY OR TOWN: Parsippany

G. STATE: N.J

H. ZIP CODE: 07054

IX. INDIAN LAND
Is the facility located on Indian lands? [ ] YES [X] NO

V. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)
N MI0000540	9P
B. UIC (Underground Injection of Fluids)	**E. OTHER (specify)**
U	9 MI0000566 (specify) NPDES
C. RCRA (Hazardous Wastes)	**E. OTHER (specify)**
R	9 MI0001805 (specify) NPDES

VI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

VII. NATURE OF BUSINESS (provide a brief description)

Manufacture of industrial inorganic chemicals, synthetic polyether polyol resins, medicinal chemicals; plus research and pilot plant activities supporting those businesses.

All correspondece regarding this application should be addressed to the office of the Director, Corporate Environmental Protection, BASF Wyandotte Corporation, P.O. Box 181, Parsippany, N.J. 07054

VIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting information, including the possibility of fine and imprisonment.

A & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
R.E. Dunn, Secretary	R E Dunn	11/17/80

COMMENTS FOR OFFICIAL USE ONLY

(fill-in areas are spaced for elite type, ...)

FORM 3 RCRA — EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F MID06419778 2 (T/A C: 1)

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

*1895

C 8 — YR. * * — MO. — DAY — FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

[ ] 2. NEW FACILITY *(Complete item below.)*

YR. — MO. — DAY — FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C — DUP — T/A C: 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	25,300	G		7				
2	S 0 1	100	Y		8				
3	T 0 2	2 X 10^6	U		9				
4	S 0 2	4,000	G		10				

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)

W	M	I	D	0	6	4	1	9	7	7	4	2		1

FOR OFFICIAL USE ONLY

W	DUP		2	DUP

DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (If a code is not entered in D(1))
1	D000		T	T02	Polyol wastewater (B627)
2	F003	1600	P	S01	non-chlor. solvents (F003)
3	F005	1600	P	S01	non-chlor solvents (F005)
4	F002	1000	P	S01	chlor. solvents (F002)
5	U044	1000	P	S01	chloroform (U044)
6	U211	1000	P	S01	tetrachloromethane (U211)
7	D001	3.5	T	S01	liq. polymer/non chl. solv (B602)
8	D000	2	T	S01	liq isocyanate/non chl solv (B604)
9	D001				Included with above
10	D000	500	P	S01	amine & non-chl. solvent (B605)
11	D000	1000	P	S01	sulfonic acid synthesis waste (B606)
12	D001	500	P	S01	vitamin waste (B607)
13	D001	500	T	S01	Polyol/silicone oil (B611)
14	D001	500	P	S01	Styrene (B612)
15	U009	500	P	S01	acrylonitrile (U009)
16	D001	2500	P	S01	solvents (B625)
17	U037	250	P	S01	chlorobenzene (U037)
18	D000	5	T	S01	methylene chloride/polymer (B628)
19	D001				Included with above
20	D000	8	T	S01	liquid amine waste (B614)
21	D000	20	T	S01	TDI/Polyol/Prepolymer liq. (B615)
22	D000	22	T	S01	Solid amine waste (B616)
23	D001	20	T	S01	non-chl solv/Polyol/H_2O (B617)
	D002	8.5	T	S02	waste caustic & acid (B618, B619, B620)
25	D000	20	T	S01	Polyurea/isocyanate solids (B621)
26					

EPA Form 3510-3 (6-80)

CONTINUE ON REVERSE

ontinued from the front.

V. DESCRIPTION OF HAZARDOUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONA ROCESS CODES FROM ITEM D(1) ON PA(3.

EPA I.D. NO. *(enter from page 1)*

												T/A	C
M	I	D	0	6	4	1	9	7	4	4	2		6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground–level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
42 12 46	83 08 47

VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
	C G		

IX. OWNER CERTIFICATION

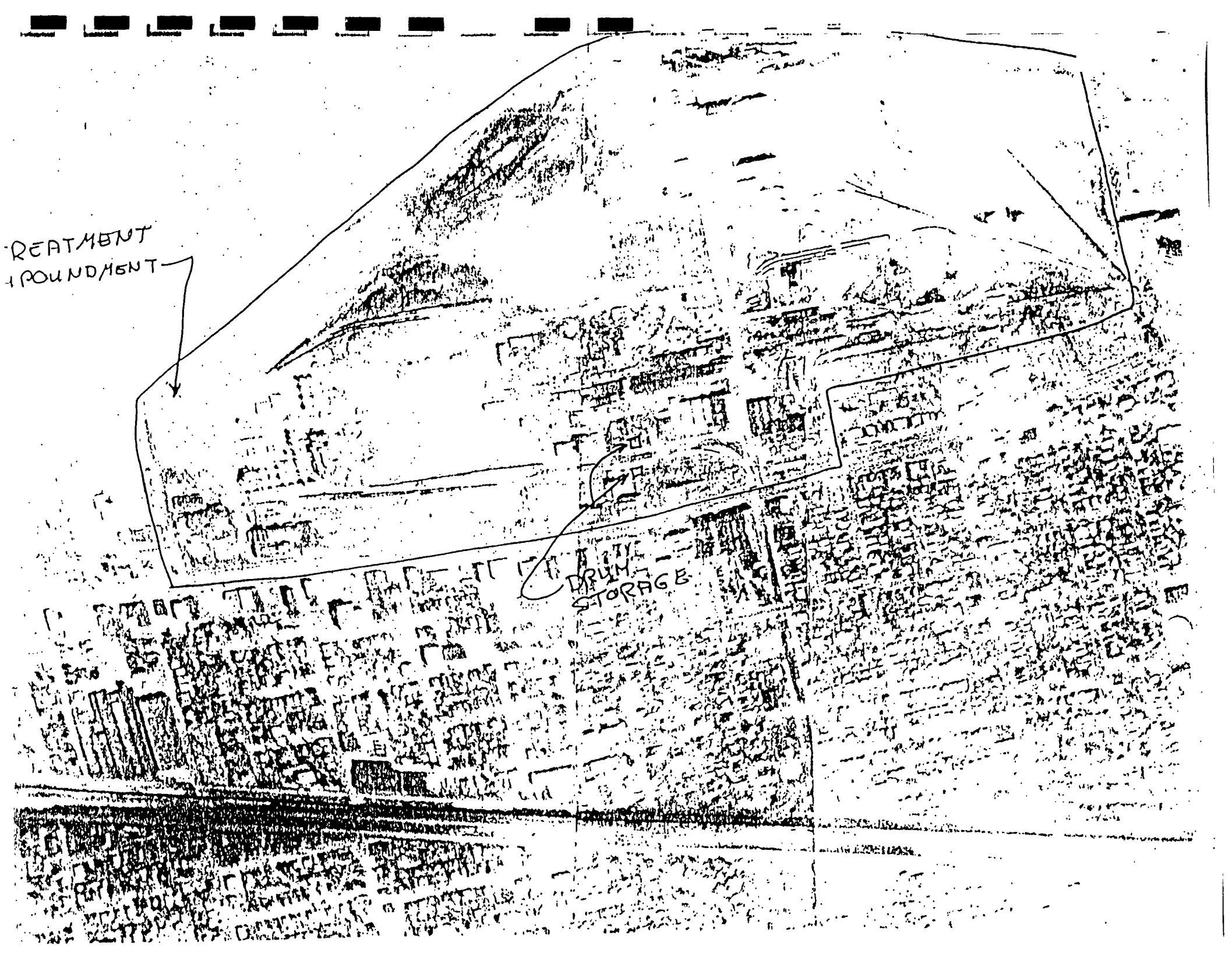
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
R.E. Dunn, Secretary	R.E. Dunn	11/17/82

X. OPERATOR CERTIFICATION

ify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached ments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
R.E. Dunn, Secretary	R.E. Dunn	11/17/82


REATMENT
POUNDMENT
DRUM
STORAGE

BASF Wyandotte Corporation

BASF

100 Cherry Hill Road
P.O Box 181
Parsippany, N.J. 07054
201/263-0200

April 8, 1981
Cert. Mail Ret. Rec. Req.
p29-2144602

Permit Contact (5EP)
U. S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Ill. 60604

Gentlemen:

Pursuant to a meeting held on April 2, 1981 with Mr. J. Boyle of your organization, BASF Wyandotte Corporation is submitting a revised and modified RCRA interim permit application. The original application was sent to you on November 17, 1980.

Key modifications are as follows;

1. Application for use of a surface impoundment for treatment has been deleted.

2. All wastes identified as "D000" only have been deleted. (Form 3, page 3).

Surface Impoundment Deletion

The original application included the use of surface impoundment for treatment as a protective action on our part. Normal wastewater flow to the pond is non-hazardous. Once during the past several years an unplanned and sudden spill of a hazardous waste was collected and contained in the pond and removed to rail cars within a 48-hour period. This was a one-time emergency action only. Due to the pond's impermeability (clay base) the short-term action to cleanup the spill prevented environmental contamination.

Subsequent to our original application, on Nov. 19, 1980, EPA published at 45 FR 76626 a definition of a spill as "---- the accidental spilling, leaking, pumping, emitting, emptying or dumping of hazardous wastes or materials which, when spilled, become hazardous waste into or on any land or water", (40CFR260.10(a) (64a)). EPA also promulgated at 40CFR122.21(d) (3) the regulation that "A person is not required to obtain a RCRA permit for those activities he carries out to immediately contain or treat a spill ----". The pond in question clearly falls under the above exclusion.

Waste Deletion

Those wastes originally designated on our application are not RCRA hazardous wastes per 40CFR260; rather, they are wastes which BASF has voluntarily decided to manage as if they were hazardous for self-protective reasons. Mr. Boyle, as well as other EPA officials of other regions, indicated that D000 was an invalid code.

Due to the permitting exclusion allowed for activities taken to immediately mitigate a spill plus the fact that only non-hazardous waste generally enters the discussed pond, BASF has decided to discontinue further interim status actions for that particular facility.

Kindly inform us within thirty (30) days if our interpretations or decisions are incorrect. Thank you for your assistance.

Very truly yours,

M. A. Wisniewski, P.E.
Manager
Corporate Environmental Protection

MAW:if

bcc: R. E. Dunn
W. Axce
K. Fry
N. D. Roush

Inter-Office Memorandum

BASF Wyandotte Corporation

To File

Date August 6, 1981

From J. H. Gebrian

Subject RCRA Interim Permit Application

Copies

Reference

Mrs. Elizabeth Utley of EPA Chicago, Illinois office verbally notified us that the surface impoundment included in our original interim application and subsequently requested for deletion has been acknowledged.

BASF Wyandotte Corporation

100 Cherry Hill Road
P.O. Box 181
Parsippany, N.J. 07054
201/263-5280

Keith Fry
Director
Corporate Environmental Protection

Certified Mail
P29 2144641

June 25, 1981

U. S. EPA
Permit Contact (5EP)
230 South Dearborn Street
Chicago, Illinois 60601

Re: RCRA Hazardous Waste Permit, EPA ID # MID 064 197 742

Gentlemen:

BASF Wyandotte Corporation (BWC) has submitted a hazardous waste permit application for BWC's facility in Wyandotte, Michigan on November 18, 1980. The latest revision to the application has been April 8, 1981. Due to an administrative oversight, an incineration process was inadvertantly omitted from Form 3, Part III.

The incinerator was constructed in 1975 and is permitted under Wayne County Air Permit Number APC 0-00460.

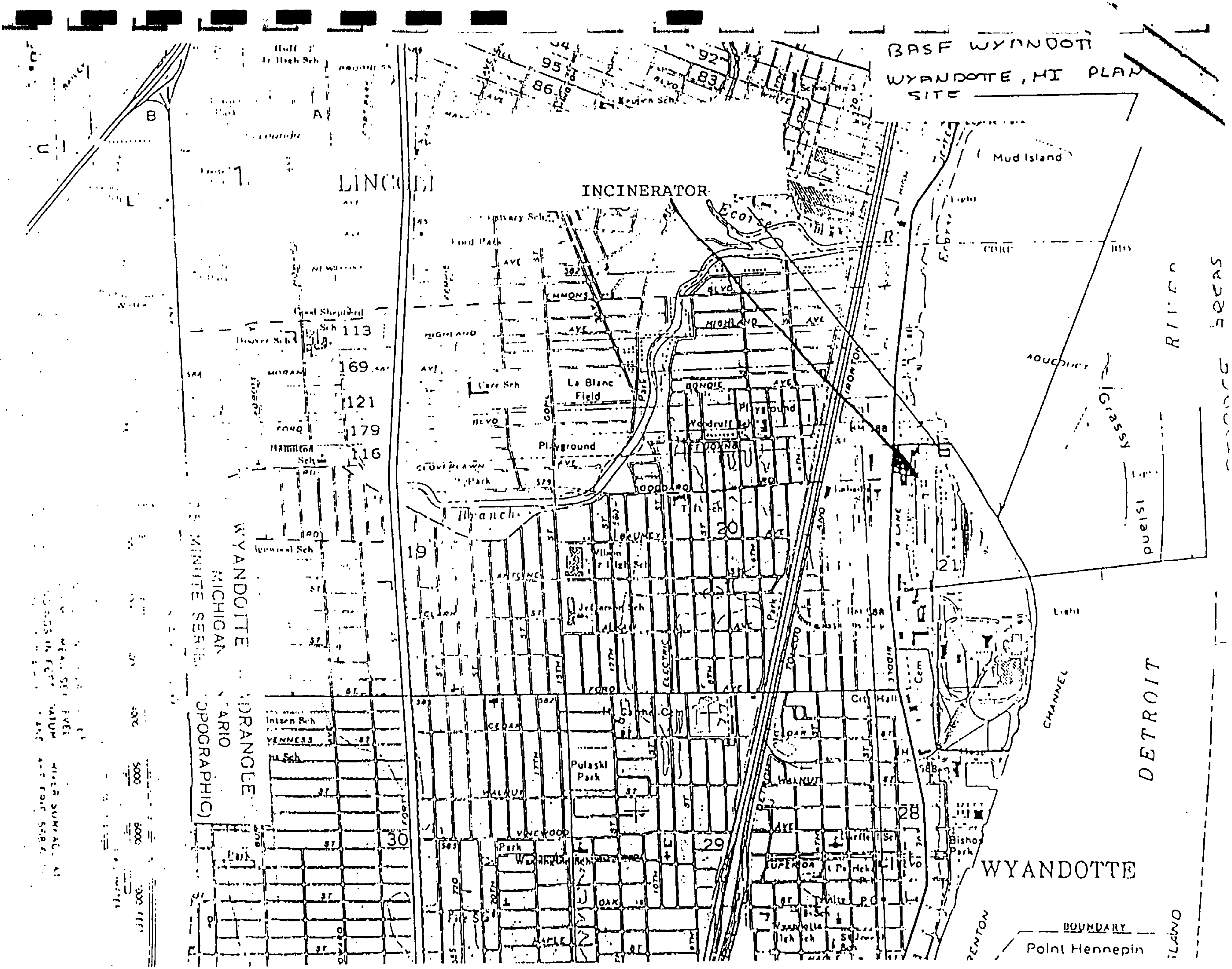
BWC hereby submits an amended complete application. Please replace this application form and attachments for the previously submitted information currently on file.

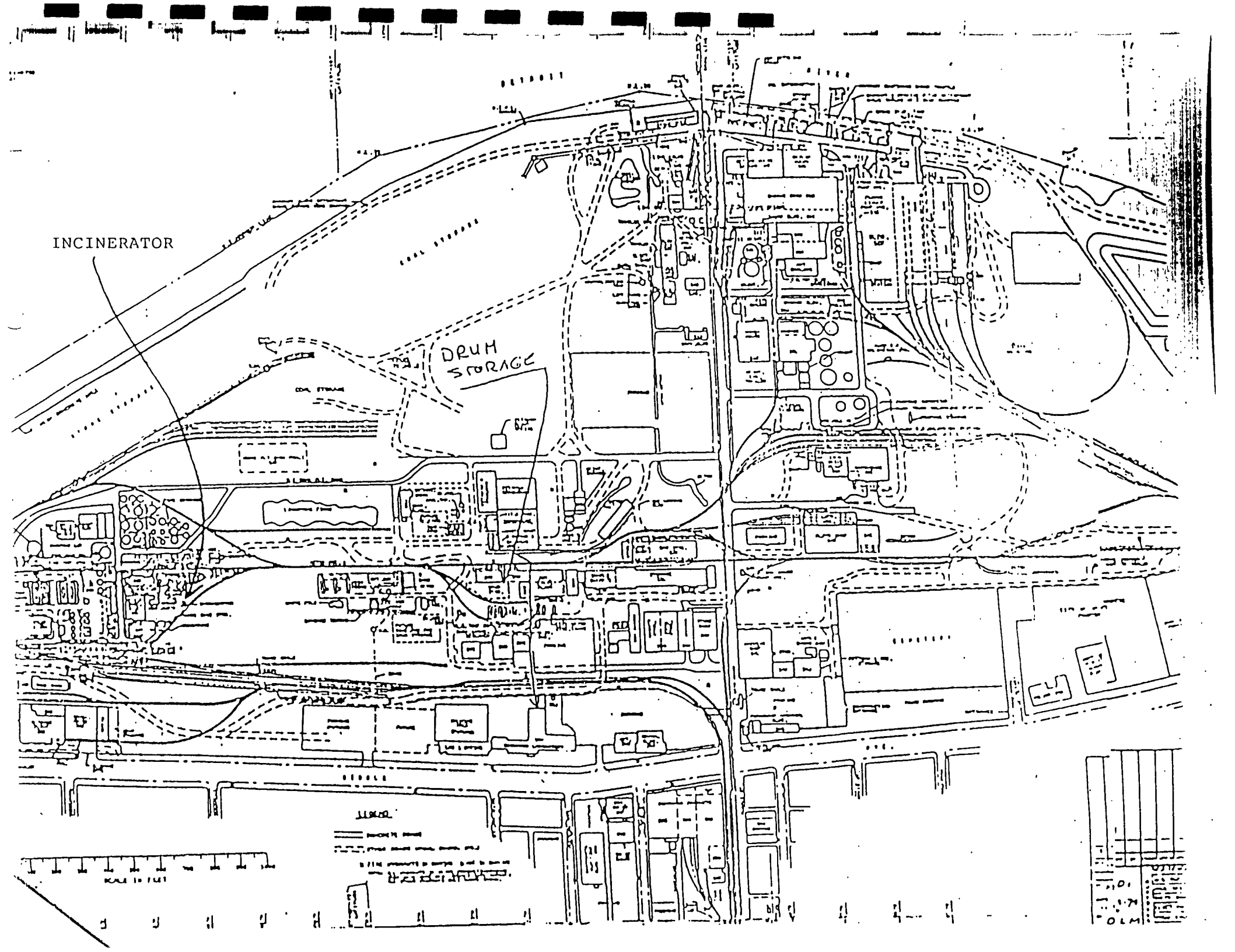
Very truly yours,

Keith Fry

Keith Fry, Director
Corporate Environmental Protection

KF:if
attachments
bcc:C. W. Axce
R. E. Dunn
H. D. Roush
J. H. Gebrian


BASF WYANDOTTE
WYANDOTTE, MI PLANT SITE
INCINERATOR
Mud Island
LINCOLN
La Blanc Field
Playground
Woodruff Sch
Pulaski Park
Grassy Island
DETROIT
RIVER
CHANNEL
WYANDOTTE
City Hall
Bishop Park
BOUNDARY
Point Hennepin
WYANDOTTE QUADRANGLE
MICHIGAN
7.5 MINUTE SERIES (TOPOGRAPHIC)
19
20
21
28
29
30


INCINERATOR
DRUM STORAGE

...nued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1): W M T D 0 6 4 1 9 7 7 4 2 | T/A: | C: 1

FOR OFFICIAL USE ONLY: W | DUP | T/A: | C: 2 | DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F003	1600	P	S01	
2	F005	1600	P	S01	
3	F002	1000	P	S01	
4	U044	1000	P	S01	
5	U211	1000	P	S01	
6	D001	3.5	T	S01	
7	D001	2	T	S01	
8	D001	500	P	S01	
9	D001	500	T	S01	
10	D001	500	T	S01	
11	U009	500	P	S01 T03	
12	D001	2500	P	S01	
13	U037	250	P	S01	
14	D001	5	T	S01	
15	D001	20	T	S01	
16	D002	8.5	T	S02	
17	D001	500	P	S01 T03	
18	D001	20	T	S01	
19					
20					
21					
22					
23					
24					
25					
26					

...ype ... institutional areas only
...ill-in areas are spaced for elite type, i.e., 12 chars/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F M T D 0 6 4 1 9 7 7 4 2

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility o revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility' EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*: C 8 | YR. * 1895 | MO. | DAY

[ ] 2. NEW FACILITY *(Complete item below.)*

FOR NEW FACILITIE PROVIDE THE DATE (yr., mo., & day) OPER TION BEGAN OR IS EXPECTED TO BEGI: YR. | MO. | DAY

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[X] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. **PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. **PROCESS DESIGN CAPACITY** – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP T/A C 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600	G		5				
X-2	T03	20	E		6				
1	S01	25,300	G		7				
2	O01	100	Y		8				
3	S02	4,000	G		9				
4	T03	0.1125	D		10				

CONTINUE ON REVERSE

Areas are spaced for elite type, i.e. 12 char./inch

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

F M I D 0 6 4 1 9 7 4 2

LABEL ITEMS

EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affi: it in the designated space. Review the inform ation carefully; if any of it is incorrect, cros through it and enter the correct data in th appropriate fill—in area below. Also, if any o the preprinted data is absent *(the area to th left of the label space lists the information that should appear)*, please provide it in th proper fill—in area(s) below. If the label i complete and correct, you need not complet Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete al items if no label has been provided. Refer t the instructions for detailed item descrip tions and for the legal authorizations unde which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility, which results in a discharge to waters of the U.S.? (FORM 2B)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)	X			D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X		X	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)				J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)			

III. NAME OF FACILITY

1 SKIP B A S F W Y A N D O T T E C O R P O R A T I O N

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 D I R E C T O R , C O R P . E N V . P R O T .	2 0 1 | 2 6 3 | 5 2 8 0

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 1 6 0 9 B I D D L E A V E N U E

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 W Y A N D O T T E	M I	4 8 1 9 2

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 1 6 0 9 B I D D L E A V E N U E

B. COUNTY NAME

W A Y N E

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 W Y A N D O T T E	M I	4 8 1 9 2	

FROM THE FRONT

SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
2819 (specify) Industrial Inorganic chemicals	C 7 2821 (specify) Synthetic resins
C. THIRD	**D. FOURTH**
33 (specify) Medicinal chemicals	C 7 (specify)

I. OPERATOR INFORMATION

A. NAME: BASF WYANDOTTE CORPORATION

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL; S = STATE; P = PRIVATE; M = PUBLIC (other than federal or state); O = OTHER (specify)
P (specify)

D. PHONE (area code & no.): C A 201 263 3400

E. STREET OR P.O. BOX: PO Box 181

F. CITY OR TOWN: Parsippany

G. STATE: NJ

H. ZIP CODE: 07054

IX. INDIAN LAND

Is the facility located on Indian lands? [ ] YES [X] NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): N MI0000540	D. PSD (Air Emissions from Proposed Sources): C 9 P
B. UIC (Underground Injection of Fluids): U	E. OTHER (specify): C 9 MI0000566 (specify) NPDES
C. RCRA (Hazardous Wastes): R	E. OTHER (specify): C 9 MI0001805 (specify) NPDES

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Manufacture of industrial inorganic chemcials, synthetic polyether polyol resins, medicinal chemicals; plus research and pilot plant activities supporting those businesses.

All correspondence regarding this application should be addressed to the office of the Director, Corporate Environmental Protection, BASF Wyandotte Corporation, P. O. Box 181, Parsippany, New Jersey 07054

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
R. E. Dunn, Secretary		12/15

COMMENTS FOR OFFICIAL USE ONLY

C

EPA Form 3510-1 (6-80) REVERSE

...m the front.

...SCRIPTION OF HAZARDOUS WASTES *(continued)*

...E THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

													T/A	C
M	I	D	0	6	4	1	9	7	4	4	2			6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
42 12 46	83 08 47

VIII. FACILITY OWNER

☐ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
	G		

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
R. E. Dunn, Secretary	Robert E. Dunn	6/25/81

X. OPERATOR CERTIFICATION

...ertify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached ...ments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the s...mitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
R. E. Dunn, Secretary	Robert E. Dunn	6/25/81

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
111 West Jackson Blvd.
CHICAGO, ILLINOIS 60604

KK

REPLY TO ATTENTION OF:
RCRA ACTIVITIES

JUN 10 1982

RECEIVED
JUN 16 1982
Corporate Environmental Protection

Keith Fry, Dir., Corp., Envr. Prot.
BASF Wyandotte Corporation
1609 Biddle Avenue
Wyandotte, Michigan 48192

RE: Interim Status Acknowledgement USEPA ID No. MID064197742
FACILITY NAME: BASF Wyandotte Corporation

Dear Mr. Fry:

This is to acknowledge that the U.S. Environmental Protection Agency (USEPA) has completed processing your Part A Hazardous Waste Permit Application. It is the opinion of this office that the information submitted is complete and that you, as an owner or operator of a hazardous waste management facility, have met the requirements of Section 3005(e) of the Resource Conservation and Recovery Act (RCRA) for Interim Status. However, should USEPA obtain information which indicates that your application was incomplete or inaccurate, you may be requested to provide further documentation of your claim for Interim Status. Our opinion will be reevaluated on the basis of this information.

As an owner or operator of a hazardous waste management facility, you are required to comply with the interim status standards as prescribed in 40 CFR Parts 122 and 265, or with State rules and regulations in those States which have been authorized under Section 3006 of RCRA. In addition, you are reminded that operating under interim status does not relieve you from the need to comply with all applicable State and local requirements.

The printout enclosed with this letter identifies the limit(s) of the process design capacities your facility may use during the interim status period. This information was obtained from your Part A Permit application. If you wish to handle new wastes, to change processes, to increase the design capacity of existing processes, or to change ownership or operational control of the facility, you may do so only as provided in 40 CFR Sections 122.22 and 122.23.

As stated in the first paragraph of this letter, you have met the requirements of 40 CFR Part 122.23; your facility may operate under interim status until such time as a permit is issued or denied. This will be preceded by a request from this office or the State (if authorized) for Part B of your application. Please contact Arthur Kawatachi of my staff at (312) 886-7449, if you have any questions concerning this letter or the enclosure.

Sincerely,

Karl J. Klepitsch, Jr., Chief
Waste Management Branch

Enclosure
cc: R.E. Dunn, Secretary

BASF Wyandotte Corporation

100 Cherry Hill Road
P.O. Box 181
Parsippany, N.J. 07054
201/263-5280

Keith Fry
Director
Corporate Environmental Protection

Certified Mail
Return Receipt Requested
P29 2144619

March 24, 1982

Mr. Alan J. Howard
Department of Natural Resources
Chief Office of Hazardous Waste Management
P. O. Box 30038
Lansing, Michigan 48909

Dear Mr. Howard:

The purpose of this letter is to inform you that BASF Wyandotte Corporation (BWC) has re-examined the applicability of an Act 64 operating license for the manufacturing process waste gas incinerator at the Graft Polyol Plant in Wyandotte, Michigan.

BWC has carefully reviewed the criteria for determination of wastes to be managed under Act 64 Rules and believes that the waste should be managed as a "notification waste" subject to the provisions of R 299.6203(2)(a). The basis for our determination is as follows:

1. The waste is a manufacturing process waste.
2. The waste is not exempted under R 299.6202.
3. It is not listed in R 299.6301.
4. The waste contains acrylonitrile and styrene as components with generic names listed in Table 302b and 302c.
5. The waste is generated in sufficient quantity and concentration to be a "notification waste" as indicated by Figure B in PART 2.
6. The waste stream is hazardous under subrule (4) of R 299.6302 which states that since the waste contains those components listed in Table 302b and 302c, the notification requirement of R 299.6203(2)(a) may apply.
7. The waste is not listed in R 299.6303, R 299.6304 and R 299.6305.
8. The waste does <u>not</u> contain components in concentrations (the waste gas stream is 90% or more nitrogen) which could impart the hazardous characteristics set forth in R 299.6201(a),(c) or (e).
9. The waste does meet the criteria for toxic waste in R 299.6201 (g)(iv), and therefore the waste is hazardous under subrule (1)(e) of R 299.6203.

10. Since the waste is hazardous under subrule (1)(e) above, the provisions of subrule (2)(a) of R 299.6203 are applicable and require both notification under subrule (2)(a)(i) and disposal of the waste under subrule (2)(a)(ii) at a facility licensed under Act 348.

Therefore, BWC believes it does not need to otherwise manage this waste under the act as long as the provision of R 299.6203(2)(a) are met. BWC hereby files the enclosed Waste Characterization Report, Form R 4911, as set forth under R 299.6904 which defines the characteristics of the waste.

With regard to Act 348, BWC has applied for an installation permit to replace the existing incinerator. Wayne County Air Pollution Control Division, under the jurisdiction of Act 348, has completed their technical review of BWC's application and has issued a "letter of intent" to issue the permit. The intent to issue the permit is subject to the condition that BWC submit dimensional equipment arrangement drawings and instrumentation schematic drawings when made available by the equipment manufacturer. BWC will comply with these conditions and a copy of the memorandum is attached.

In anticipation of DNR concurrence with BWC's evaluation of the applicability of an Act 64 operating license, BWC respectfully requests the DNR return the Act 64 application package and draft addendums dated August 13, 1981, September 30, 1981 and February 15, 1982. BWC by copy of this letter has notified Wayne County Air Pollution Control Division of its determination and the applicability of an Act 64 operating license to this project.

Please contact Mr. Keith Fry at (201) 263-5280 if there are questions concerning BWC's determination.

Very truly yours,

BASF WYANDOTTE CORPORATION

Keith Fry
Director,
Corporate Environmental Protection

KF:lt

Attachments

cc: W. C. Achinger
A. C. Scheans
H. D. Roush
C. W. Axce

bcc: F. J. Federico
D. C. Figg

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T MASON BUILDING
BOX 30028
LANSING, MI 48909
HOWARD A TANNER, Director

June 15, 1982

RECEIVED
JUN 24 1982
Corporate Environmental Protection

Mr. Keith Fry, Director
Corporate Environmental Protection
BASF Wyandotte Corp.
P.O. Box 181
Parsippany, New Jersey 07054

Dear Mr. Fry:

I have received your March 24, 1982 letter regarding BASF Wyandotte's proposed waste gas incinerator at the Graft Polyol Plant in Wyandotte Michigan. In your letter, you requested that your operating license application under Michigan's Hazardous Waste Management Act, Act 64, P.A. 1979, for this facility be withdrawn on the basis that the wastes generated from the Graft Polyol Plant are "notification wastes", and therefore do not require disposal at a facility licensed under Act 64.

After reviewing your demonstration and inspecting the Graft Polyol Plant, this Department concurs that the wastes generated are "notification wastes" under Act 64. As long as emissions of these wastes are permitted under the Water Resources Commission Act, Act 245, P.A. 1929 and the Air Pollution Act, Act 348, P.A. 1965, an operating license under Act 64 is not required. However, please be advised that if you contemplate any future operational changes which would result in a managed hazardous waste being fed to the incinerator, both an Act 64 construction permit and operating license would be required.

I am returning your application as you have requested and have asked that your $500 license application fee be refunded. If you have any further questions regarding the applicability of Act 64 to wastes generated at BASF Wyandotte, please do not hesitate to contact me.

Sincerely,

ENVIRONMENTAL SERVICES DIVISION

Alan J. Howard

Alan J. Howard, Chief
Office of Hazardous Waste Management

AJH/PR:tkr
Enclosure
cc: D. Rector
C. McIntosh, AQD
A. Sheens, Wayne Co. Health Dept.

File by SW Doc

RECEIVED

AUG 24 1984

Corporate Environmental Protection

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST
CHICAGO, ILLINOIS 60604

AUG 20 1984

REPLY TO ATTENTION OF
5HW-13

FILE

R. E. Dunn, Secretary
BASF Wyandotte Corporation
100 Cherry Hill Road
P. O. Box 181
Parsippany, New Jersey 07054

RE: Request for Information--Part A Hazardous Waste Permit Application Review
(Treatment by Incineration)
FACILITY NAME: BASF Wyandotte Corporation
U.S. EPA ID NO.: MID064197742

Dear Mr. Dunn:

This letter serves to inform you that the United States Environmental Protection Agency has completed a review of your Part A Hazardous Waste Permit Application. Our review indicates your facility may be required to comply with the incinerator regulations under §3005 of the Resource Conservation and Recovery Act, as amended; however, further clarification is needed.

Based on the information submitted, your facility appears to treat hazardous waste in an incinerator. If it does, you must comply with the incinerator requirements as defined in 40 CFR Part 265 Subpart O (enclosed). If you determine that your facility does not treat hazardous waste in an incinerator, please submit a revised Part A and a detailed explanation of all changes made to the Regional Office indicating your present methods of hazardous waste treatment, storage, or disposal. Unless we receive a reply within 15 days, — 4 Sep we will assume that your facility treats hazardous waste in an incinerator and is subject to all permitting requirements.

Please be advised that if at any time since November 19, 1980, your operation included the treatment of hazardous waste in an incinerator subject to 40 CFR Part 265, a closure plan must be filed with the Regional office. Requirements for closure are found in 40 CFR Part 265 Subpart G (enclosed).

Please contact the Regulatory Analysis and Information Unit at (312) 886-6148 for assistance, if you have any questions. Please refer to "Request for Information--Treatment by Incineration," in all correspondence on this matter.

Sincerely yours,

for [signature]

Elmore Christenson, Chief
State Programs and Information Section

by 10th
Allows 6 days & can extend further.

Enclosures

cc: Keith Fry, Director of Corporate Env. Prot.

BASF Wyandotte Corporation

100 Cherry Hill Road
P.O. Box 181
Parsippany, N.J. 07054
201/263-5280

Keith Fry
Director
Corporate Environmental Protection

Certified Mail
P35 1210916
Return Receipt Requested

September 5, 1984

Ms. L. Pierard
US EPA - Region V
Hazardous Waste Management Branch (5HW-13)
230 South Dearborn Street
Chicago, IL 60604

Re: Request for Information - Treatment by Incineration

Dear Ms. Pierard:

The following is provided in response to your request for information dated 20 August 1984, concerning BASF Wyandotte Corporation's (MID064197742) Part A Hazardous Waste Permit Application.

On June 25, 1981, BASF Wyandotte Corporation amended the hazardous waste permit application for our Wyandotte, Michigan facility. The submittal contained a complete amended application and listed an incinerator with the design capacity to process 0.1125 tons per day of hazardous waste. This liquid incinerator was constructed in 1974/75, and was approved for operation in accordance with Wayne County Air Pollution Control Regulations, as amended November 5, 1975. Shortly after start-up, the unit experienced significant difficulties and was temporarily left idle. It was added to our June 1981 hazardous waste permit application in the event the unit was recommissioned. It was, however, subsequently decided in 1982 to permenantly decommission and dismantle the unit. Dismantling was completed in December 1982.

The incinerator has not operated since November 19, 1980, and has never treated regulated hazardous waste. BASF Wyandotte Corporation, therefore, requests that by receipt of this letter EPA amend our current hazardous waste permit application by deleting reference to this unit on Form 3, Parts III and IV. BASF Wyandotte Corporation will similarly amend our files.

Very truly yours,

BASF WYANDOTTE CORPORATION

Keith Fry

Keith Fry, Director
Corporate Environmental Protection

ADG/ja
cc: HD Roush

APR 21 1988

11/30/85

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

RONALD O SKOOG, Director

S.E. Michigan Field Office
15500 Sheldon Road
Northville, MI 48167

December 30, 1985

Mr. H. Dale Roush
BASF Wyandotte Corporation
1609 Biddle Avenue
Wyandotte, Michigan 48192

Re: MID 064197742

Dear Mr. Roush:

On December 10, 1985, acting as a representative of the United States Environmental Protection Agency, I performed an inspection of your facility located at 1609 Biddle Avenue, Wyandotte, Michigan. The purpose of this inspection was to evaluate compliance of that facility with the requirements of Subtitle C of the Resource Conservation and Recovery Act (RCRA) as amended.

As a result of that inspection, it has been determined that the above facility is in violation of some of the requirements of Subtitle C of RCRA. Specifically, the following was found:

(1) 40 CFR 261.2, e(1), F - These sections allow certain recycled materials to be exempt from the definition of solid waste and, therefore, regulation, if there is documentation that the materials meet the exclusion.

The facility's waste acetic acid generated by the Vitamin E plant is considered a high grade material which is sold at about 75% of the going rate for the commercial product. This would indicate the material qualifies for the 261.2e exemption, however, there was no information available regarding its end use let alone documentation of the material being recycled or used as a commercial product substitute.

This facility also used ferrous sulfate crystals separated from pickling liquor (K062) that were supplied by Ever Lock in Taylor. These were used in BASF's pigment operation. This appears to also be exempt if proper documentation is available. If the facility receives quantity in excess of that which is used in pigments, the excess may be a regulated waste.

(2) 40 CFR 270.71 - This section states that during interim status a facility shall not treat, store or dispose of hazardous waste except as specified in the Part A. Revisions can be made in the Part A as allowed in Section 270.72.

The facility representatives last submitted a revised Part A on June 25, 1981. This was again revised by letter dated September 5, 1984, which requested removal of an inoperative incinerator. The resulting Part A lists these storage areas: (1) a drum storage area within the research building; (2) an outdoor drum storage area; and (3) the bulk storage of the waste acetic acid discussed above.

The facility closure plan dated April 23, 1985, and the inspection identified differences from the Part A.

The drum storage area (1) within the research building was no longer listed as a storage area but rather was considered a satellite area. This will be discussed later. The closure plan identified a 90 day storage area in a warehouse. However, this site was actually being used for longer than 90 days and for offsite (Troy) waste storage. This was not in compliance with the Part A and its revisions.

(3) Only generators storing their own wastes (up to 90 days) and transporters (for 10 days) are allowed to store wastes without being in compliance with TSD requirements. The facility had eight drums of wastes from offsite and was not in compliance with:

(a) 265.13 Waste analysis
(b) 265.71 Manifests
(c) 265.73 Operating record

(4) 40 CFR 265 Subpart D - This section requires a contingency plan to be prepared containing updated emergency numbers and to be distributed to local agencies.

The facility's contingency (PIP) plan had not been updated. The numbers for three local and one state agency were wrong. The plan needs to be updated and distributed to the referenced local agencies.

The following are not violations but areas needing further review.

(A) The facility's liability insurance is worded such that it appears the entire BASF corporation has a two million dollar aggregate policy. This is required for each of the four BASF - TSD facilities and, therefore, needs clarification.

(B) The facility listed the isocyanate and polyol filter cake wastes as corrosive (D002) on the Part A. As both are reportedly water reactive, it would seem the hazards would be better represented by the reactive (D003) designation.

(C) The position was taken that only the two environmental positions required training. The presence of waste placed in a reportedly closed storage area, off site waste in storage, unknown waste containers placed in the storage and missing labels and dates would seem to indicate that others at the facility need to be trained.

(D) The storage in the research lab area is said to be a satellite area. This was not inspected. The facility needs to ensure that the area complies with the satellite area conditions.

(E) The proposed closure of the ~~paved~~ CONCRETE outdoor storage area should be able to be done easily when waste is no longer stored there. It appeared to be clean and well maintained.

(F) The facility had requested a variance from classification as solid waste for the heptane and methanol waste streams. These were used as carrier solvents in the vitamin manufacturing operation. The operations seemed to be environmentally sound and an efficient use of materials. It's been recommended that the variance be approved.

You are requested to respond to this letter by January 30, 1986, providing documentation to this office regarding those actions taken to correct these violations. If you have any questions regarding this matter, please feel free to contact me at (313) 459-9180.

Sincerely,

Margaret A. Field's
HAZARDOUS WASTE DIVISION

MAF:mlm
enc.
cc: U.S. EPA, Region V
B. Okwumabua

STATE OF MICHIGAN TRANSMITTAL

TO: NAME	TO: NAME
1. H. D. Roush	5. BASF - Chemicals Div.
2.	6. Attn: H. D. Roush
3.	7. 1609 Biddle Ave.
4.	8. Wyandotte, MI 48192

FOR ACTION AS INDICATED

☐ SIGNATURE	☐ REPLY-MY SIGNATURE	☐ NOTE AND FORWARD
☐ APPROVAL	☐ REPLY-COPY TO ME	☐ NOTE AND FILE
☐ ACTION	☐ PLEASE SUMMARIZE	☐ NOTE AND RETURN
☐ COMMENTS	☐ PLEASE INVESTIGATE	☐ PLEASE PHONE ME
☐ INFORMATION	☒ FORWARDED PER REQUEST	☐ PLEASE SEE ME

REMARKS: This is the documentation we have in our files regarding the status of the incinerator. I have spoken w/ Rhonda Hall and she will be contacting both EPA and her supervisor on this issue. We can discuss the incinerator during the 10/19 meeting.

FROM Dana W. Devantier | DATE 10/13/88

FORM 10580

BASF Wyandotte Corporation

100 Cherry Hill Road
P O Box 181
Parsippany, N.J. 07054
201/263-5280

RECEIVED
SEP 24 1984

RECEIVED
SEP 20 1984
HAZARDOUS WASTE DIVISION

Keith Fry
Director
Corporate Environmental Protection

Certified Mail
P35 1210916
Return Receipt Requested

September 5, 1984

Ms. L. Pierard
US EPA - Region V
Hazardous Waste Management Branch (5HW-13)
230 South Dearborn Street
Chicago, IL 60604

RECEIVED
SEP 11 1984
WMD-RMU
EPA, REGION V

Re: Request for Information - Treatment by Incineration

Dear Ms. Pierard:

The following is provided in response to your request for information dated 20 August 1984, concerning BASF Wyandotte Corporation's (MID064197742) G,TSD,PA, Part A Hazardous Waste Permit Application.

On June 25, 1981, BASF Wyandotte Corporation amended the hazardous waste permit application for our Wyandotte, Michigan facility. The submittal contained a complete amended application and listed an incinerator with the design capacity to process 0.1125 tons per day of hazardous waste. This liquid incinerator was constructed in 1974/75, and was approved for operation in accordance with Wayne County Air Pollution Control Regulations, as amended November 5, 1975. Shortly after start-up, the unit experienced significant difficulties and was temporarily left idle. It was added to our June 1981 hazardous waste permit application in the event the unit was recommissioned. It was, however, subsequently decided in 1982 to permenantly decommission and dismantle the unit. Dismantling was completed in December 1982.

The incinerator has not operated since November 19, 1980, and has never treated regulated hazardous waste. BASF Wyandotte Corporation, therefore, requests that by receipt of this letter EPA amend our current hazardous waste permit application by deleting reference to this unit on Form 3, Parts III and IV. BASF Wyandotte Corporation will similarly amend our files.

Very truly yours,

BASF WYANDOTTE CORPORATION

Keith Fry

Keith Fry, Director
Corporate Environmental Protection

ADG/ja
cc: HD Roush

RCRA INSPECTION REPORT

EPA Identification Number: MID 064 197742

Installation Name: BASF WYANDOTTE CORP

Location Address: 1609 BIDDLE AVE.

City: WYANDOTTE State: MI 48192

Date of Inspection 12/10/85 Time of Inspection (from) 9:30AM (to) 4PM

Person(s) Interviewed	Title	Telephone
H. DALE ROUSH	MNGR ENVIR. PROT. HEALTH & SAFETY	(313) 282-3300

Inspector(s)	Agency/Title	Telephone
MARGARET FIELDS	MDNR/EQA	(313) 459-9180

Installation Activity (mark only one box)	Inspection Form(s)
☒ Treatment/Storage/Disposal per 40 CFR §265.1 and/or Generation and/or Transportation	A
☐ Treatment/Storage/Disposal (No Generation or Transportation)	A
☐ Generation and Transportation	B,C
☐ Generation Only	B
☐ Transportation Only	C

INSPECTION FORM A

Section A: SCOPE OF INSPECTION.

1. Interim status standards for treatment storage or disposal of HAZARDOUS WASTES SUBJECT TO 40 CFR 265.1. Complete Inspection Form A sections B, C, D, E, and G.

2. Place an "X" in the box(es) corresponding to the facility's treatment, storage and disposal processes, and generation and/or transportation activity (if any). Complete only the applicable sections and appendixes.

Permit application process(es) (EPA Form 3510-3)			Inspection Form A section(s)
S01	[X]	storage in containers	I
S02	[ ]	storage in tanks Considered a product see letter	J
T01	[ ]	treatment in tanks	J
S04	[ ]	storage in surface impoundment	K,F
T02	[ ]	treatment in surface impoundment	K,F
D83	[ ]	disposal in surface impoundment	K,F
S03	[ ]	storage in waste pile	L
D81	[ ]	disposal by land application	M,F
D80	[ ]	disposal in landfill	N,F
T03	[ ]	treatment by incineration Notified but never used + withdrew	O/P
T04	[ ]	treatment in devices other than tanks, surface impoundments, or incinerators	Q

Other activities

GENERATOR	[X]	APPENDIX	GN
TRANSPORTER	[ ]	APPENDIX	TR

3. Indicate any hazardous waste processes, by process code, which have been omitted from Part A of the facility's permit application.
None - But recommend reclassifying isocyanates as D003 + adding D00

4. Indicate any hazardous waste processes (by process code and line number on EPA Form 3510-3 page 1 of 5) which appear to be eligible for exclusion per 40 CFR 265.1(c). Provide a brief rationale for the possible exclusion.
The part A shows incineration but this has been withdrawn by letter

BASF Corporation
Chemicals Division

BASF

CERTIFIED MAIL - RETURN RECEIPT
REQUESTED: P 803 601 591

October 11, 1988

Mr. Alan Howard
Michigan Department of Natural Resources
Waste Management Division
P. O. Box 30028
Lansing, MI 48909

Dear Mr. Howard:

In November of 1980, BASF Corporation, Chemicals Division (BASF) in Wyandotte, Michigan provided Federal/State environmental agencies with the appropriate notification and application forms to be granted Interim Status for operation of a hazardous waste Treatment, Storage, or Disposal (TSD) facility under the Resource Conservation and Recovery Act (RCRA). These documents were submitted as a "protective filing," as BASF desired to be in full compliance with the newly promulgated hazardous waste management regulations.

BASF's TSD Part A application includes two (2) container storage areas and a 4,000-gallon tank. It has come to the attention of BASF that one of the two drum storage areas and the 4,000-gallon tank should have either not been included on the application or the application should have been subsequently amended to delete those items. The reasons for our opinion on this matter are listed below:

- 100 Cubic Yard Container Storage Area

  The Research & Development facilities of the Wyandotte complex are located on the west side of the BASF property. A storage building is located slightly southeast of these facilities and adjacent to this building is a 6.75 ft. x 26 ft. long concrete pad. The type of hazardous waste materials that BASF has temporarily stored in this area are ignitable wastes ("D" wastes) and wastes from non-specific sources ("F" wastes).

  Since filing the TSD Part A application in November of 1980, BASF has never stored hazardous wastes on the concrete pad described above for a period of time exceeding 90 days. All hazardous wastes stored on the pad were also transported off-site to an appropriately licensed disposal site within 90 days of the date when wastes began accumulating in that area.

- 4,000-Gallon Tank

  The subject tank is an in-line component of BASF's Vitamin E manufacturing process. The acetic acid that accumulates in the tank is a by-product of this manufacturing process. The acid is not contaminated with residual chemical constituents (e.g., excessive heavy metals) to the extent that it is unusable. The normal procedure at BASF is to sell the acetic acid to a buyer. BASF believes that when this procedure is followed the material does not meet the definition of "solid waste" provided in 40 CFR 261.2 or (Michigan) Act 64 since the material is not normally discarded.

On four occasions in the past 8 years the subject tank became full of acetic acid and BASF did not have a party available to purchase the material. On these occasions BASF completely emptied the tank, manifested the acetic acid as a hazardous waste, and shipped the material off-site for neutralization/disposal. BASF emphasizes that since November of 1980, waste acid could never have been stored in the tank for a period of time exceeding 90 days. The Vitamin E manufacturing process is a continuously operated system and acetic acid is generated at a rate of approximately 185 gallons/operating day. This flow rate is sufficient to fill the 4,000-gallon tank to full capacity within approximately 22 operating days. If the tank becomes full, process operators are required to shut down the system (a condition considered highly undesirable by BASF).

Since November, 1987, a 1-inch diameter process waste pipe has been connected from the subject tank to a neutralization vessel. When a buyer is not available, the acetic acid is pumped to the neutralization vessel, the pH is adjusted, and the resultant solution is discharged to the sanitary sewer (with permission from the local wastewater authority).

BASF respectfully requests that the Michigan Department of Natural Resources (MDNR) amend our current TSD Part A permit application by deleting reference to the 100-cubic yard container storage area and the 4,000-gallon tank on Form 3 Section III. BASF further requests that the MDNR confirm in writing that the permit application has been amended. Notwithstanding any notification to the contrary, BASF will consider that by MDNR receipt of this letter the subject tank will no longer be considered part of our respective TSD Part A permit application.

As a current employee and duly authorized representative of BASF Corporation Chemicals Division, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

H. D. Roush
Manager
Quality & Ecology Services Department

mh
atts.

bc: CWAxce
KFry
NEHowe
LRTetzlaff

BASF CORPORATION, CHEMICALS DIVISION
WYANDOTTE, MICHIGAN

AFFIDAVIT STATEMENT

BASF's Vitamin E manufacturing process includes a 4,000-gallon tank as an in-line component vessel. Acetic acid accumulates in the tank as a by-product of the Vitamin E manufacturing process. This acid is not contaminated with residual chemical constituents (e.g., excessive heavy metals) to the extent that it is unusable. Normal BASF procedure is to sell the acetic acid to a buyer.

On four occasions in the past eight years the subject tank became full of acetic acid and BASF did not have a party available to purchase the material. On these occasions BASF completely emptied the tank, manifested the acetic acid as a hazardous waste and shipped the material off-site for neutralization/disposal. BASF emphasizes that since November of 1980, waste acid could never have been stored in the tank for a period of time exceeding 90 days. The Vitamin E manufacturing process is a continuously operated system and acetic acid is generated at a rate of approximately 185 gallons/operating day. This flow rate is sufficient to fill the 4,000-gallon tank to full capacity within approximately 22 operating days. If the tank becomes full, process operators are required to shut down the system (a condition considered highly undesirable by BASF).

Since November 1987, a one-inch diameter process waste pipe has been used to divert this stream to a neutralization vessel. When a buyer for the acetic acid is not available, the acid is pumped to the neutralization vessel, the pH is adjusted, and the resultant solution is discharged to the sanitary sewer.

As a current employee and duly authorized representative of BASF Corporation, Chemicals Division, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

L. R. Tetzlaff

Date 10/12/88

L. R. Tetzlaff
Superintendent - Vitamin E Plant

BASF CORPORATION, CHEMICALS DIVISION
WYANDOTTE, MICHIGAN

AFFIDAVIT STATEMENT

The Research & Development facilities of the Wyandotte complex are located on the west side of the BASF property. A storage building is located slightly southeast of these facilities and adjacent to this building is a 6.75 ft. x 26 ft. long concrete pad. The type of hazardous waste materials that BASF has temporarily stored in this area are ignitable wastes ("D" wastes) and wastes from non-specific sources ("F" wastes).

Since filing the TSD Part A application in November of 1980, BASF has never stored hazardous wastes on the concrete pad described above for a period of time exceeding 90 days. All hazardous wastes stored on the pad were also transported off-site to an appropriately licensed disposal site within 90 days of the date when wastes began accumulating in that area.

As a current employee and duly authorized representative of BASF Corporation, Chemicals Division, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Richard A. Moore Date October 11, 1984

Richard A. Moore
Safety & Ecology Coordinator - R&D

APPENDIX B

AFFIDAVIT STATEMENTS BY BASF EMPLOYEES/REPRESENTATIVES

BASF CORPORATION, CHEMICALS DIVISION
WYANDOTTE, MICHIGAN

AFFIDAVIT STATEMENT

The Research & Development facilities of the Wyandotte complex are located on the west side of the BASF property. A storage building is located slightly southeast of these facilities and adjacent to this building is a 6.75 ft. x 26 ft. long concrete pad. The type of hazardous waste materials that BASF has temporarily stored in this area are ignitable wastes ("D" wastes) and wastes from non-specific sources ("F" wastes).

Since filing the TSD Part A application in November of 1980, BASF has never stored hazardous wastes on the concrete pad described above for a period of time exceeding 90 days. All hazardous wastes stored on the pad were also transported off-site to an appropriately licensed disposal site within 90 days of the date when wastes began accumulating in that area.

As a current employee and duly authorized representative of BASF Corporation, Chemicals Division, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Richard A. Moore Date October 11, 1984

Richard A. Moore
Safety & Ecology Coordinator - R&D

BASF CORPORATION, CHEMICALS DIVISION
WYANDOTTE, MICHIGAN

AFFIDAVIT STATEMENT

BASF's Vitamin E manufacturing process includes a 4,000-gallon tank as an in-line component vessel. Acetic acid accumulates in the tank as a by-product of the Vitamin E manufacturing process. This acid is not contaminated with residual chemical constituents (e.g., excessive heavy metals) to the extent that it is unusable. Normal BASF procedure is to sell the acetic acid to a buyer.

On four occasions in the past eight years the subject tank became full of acetic acid and BASF did not have a party available to purchase the material. On these occasions BASF completely emptied the tank, manifested the acetic acid as a hazardous waste and shipped the material off-site for neutralization/disposal. BASF emphasizes that since November of 1980, waste acid could never have been stored in the tank for a period of time exceeding 90 days. The Vitamin E manufacturing process is a continuously operated system and acetic acid is generated at a rate of approximately 185 gallons/operating day. This flow rate is sufficient to fill the 4,000-gallon tank to full capacity within approximately 22 operating days. If the tank becomes full, process operators are required to shut down the system (a condition considered highly undesirable by BASF).

Since November 1987, a one-inch diameter process waste pipe has been used to divert this stream to a neutralization vessel. When a buyer for the acetic acid is not available, the acid is pumped to the neutralization vessel, the pH is adjusted, and the resultant solution is discharged to the sanitary sewer.

As a current employee and duly authorized representative of BASF Corporation, Chemicals Division, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

L R Tetzlaff Date 10/12/88

L. R. Tetzlaff
Superintendent - Vitamin E Plant

BASF CORPORATION - CHEMICALS DIVISION
WYANDOTTE, MICHIGAN

AFFIDAVIT STATEMENT

BASF Corporation - Chemicals Division (BASF) operates a 230-acre industrial complex in Wyandotte, Michigan which is often referred to as the North Works. Manufacturing and research operations at this complex generate several types of hazardous waste materials. Past BASF practice was to store materials on-site in containers at a concrete pad located in the approximate center of the complex until off-site transport became practical from a economical perspective. This storage area was designated in BASF's November 18, 1980 Part A application for a hazardous waste management facility permit and was listed as having a storage capacity of 25,300 gallons. BASF refers to the area as Storage Area #1.

In the last quarter of 1986, BASF discontinued the practice of placing hazardous waste containers in Storage Area #1 and made arrangements to transport all hazardous wastes stored in the area off-site to appropriately licensed disposal facilities. The last drum of hazardous waste materials was removed from the subject storage area on March 25, 1987. Since that date, no hazardous wastes have been placed in the area and BASF considers Storage Area #1 closed.

As a current employee and duly authorized representative of BASF Corporation - Chemicals Division, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Lyman A. Anderson Date Nov 4, 1988

Lyman A. Anderson
Ecology Supervisor

APPENDIX C

1983 CIVIL ACTION INITIATED BY MDNR/STATE OF MICHIGAN

UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

FRANK J. KELLEY, Attorney General for the State of Michigan, ex rel MICHIGAN NATURAL RESOURCES COMMISSION, MICHIGAN WATER RESOURCES COMMISSION, and DR. RONALD SKOOG, Ph.D., Director of the Michigan Department of Natural Resources,

Plaintiffs,

v

Civil Action No. 83CV47120T

BASF WYANDOTTE CORPORATION,

Defendant.
_____/

COMPLAINT

FRANK J. KELLEY
Attorney General

Stewart H. Freeman
Assistant Attorey General
In Charge

Stephen F. Schuesler
Assistant Attorney General
Environmental Protection Division
720 Law Building
Lansing, MI 48913
(517) 373-7780

Dated: OCT 31 1983

UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

FRANK J. KELLEY, Attorney General for the State of Michigan, ex rel MICHIGAN NATURAL RESOURCES COMMISSION, MICHIGAN WATER RESOURCES COMMISSION, and DR. RONALD SKOOG, Ph.D., Director of the Michigan Department of Natural Resources,

Plaintiffs,

v Civil Action No.

BASF WYANDOTTE CORPORATION,

Defendant.
_____/

COMPLAINT

Plaintiffs, by their attorneys Frank J. Kelley, Attorney General, and Stewart H. Freeman and Stephen F. Schuesler, Assistant Attorneys General, complain as follows:

STATEMENT OF THE CASE

1. This is a civil action instituted pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC § 9601, et seq, the Resource Conservation and Recovery Act, 42 USC § 6901, et seq, and pursuant to state law, the Michigan Water Resources Commission Act, 1929 PA 245, MCL 321.1 et seq; MSA 3.521 et seq, the Michigan Environmental Protection Act, 1970 PA 127,

MCL 691.1201, et seq; MSA 14.528(201) et seq, and the common law of the State of Michigan. Plaintiffs seek damages, injunctive and other relief as a result of the substantial injury and endangerment to health and the environment caused by the disposal of hazardous chemical wastes into the ground, groundwater, and surface waters in and around the City of Wyandotte, Michigan.

JURISDICTION, VENUE, AND NOTICE

2. This Court has jurisdiction over this action pursuant to 28 USC § 1331, 42 USC § 9613, and 42 USC § 6972.

3. Venue is proper in this district, pursuant to 28 USC § 1391(b), 42 USC § 9613, and 42 USC § 6972, the violations and damages having there occurred.

4. More than sixty (60) days prior to the filing of this Complaint, notice of the violation alleged and the claim made herein was presented pursuant to 42 USC §§ 6972 and 9612 to the Defendant, who is the owner of the facility from which hazardous substances have been released, and to the Administrator. The claim has not been satisfied.

THE PARTIES

5. Plaintiff Frank J. Kelley is the duly elected Attorney General of the State of Michigan, holding such

office pursuant to the provisions of Constitution 1963, article 5, section 21. He is the head of the Department of the Attorney General created by the Executive Organization Act, 1965 PA 380, MCL 16.150; MSA 3.29(50). The Attorney General possesses both statutory and common law powers to bring this action on behalf of the people of the State of Michigan and its governmental agencies.

6. The Michigan Natural Resources Commission supervises the Michigan Department of Natural Resources (hereinafter, DNR) pursuant to 1965 PA 380, MCL 16.350 et seq; MSA 3.29(50), et seq; and has been designated by the Governor in Executive Order 1973-2 as "the state entity responsible for the development and coordination of all environmental functions and programs of the State of Michigan."

7. Dr. Ronald Skoog is the Director of the DNR.

8. The Michigan Water Resources Commission (hereinafter, WRC) is a board of statewide jurisdiction, created pursuant to the Michigan Water Resources Commission Act, supra. Under this Act, the WRC is directed to "protect and conserve the water resources of the state and shall have control of the pollution of surface or underground waters of the state and the Great Lakes...." MCL 323.2.*

*Certain authority, powers, duties, functions, and responsibilities of the WRC have been transferred to the DNR. See Executive Orders 1973-2 and 1976-8.

9. Defendant BASF Wyandotte Corporation (hereinafter, BASF) is a Michigan corporation doing business in the city of Wyandotte, Michigan, where it owns and operates a chemical plant. BASF, formerly known as Wyandotte Chemical Corporation, is a wholly-owned subsidiary of BASF America Corporation, a Delaware corporation with its principal place of business in the State of New Jersey. BASF America Corporation is a wholly-owned subsidiary of BASF Aktiengesellschaft, a corporation organized under the Federal Republic of West Germany, with its principal place of business in Ludwighaven, West Germany.

CHEMICAL CONTAMINATION AT THE NORTH AND SOUTH WORKS.

10. Defendant owns two parcels of land in the city of Wyandotte, Wayne County, Michigan, which it has used in the manufacture, storage and distribution of chemical products. One parcel, which will be referred to hereinafter as the "North Works" may be generally described as bounded on the east by the Trenton Channel of the Detroit River, on the west by Biddle Avenue, on the north by Perry Place Street, and on the south by Mulberry Street. The other parcel, hereinafter referred to as the "South Works," may generally be described as bounded on the east by the Trenton Channel of the Detroit River, on the west by Biddle Avenue, on the north by Pine Street, and on the South by Wye Street. A more exact description of the North and South Works is set forth in Exhibit A.

11. On May 26, 1981, the United States of America and its Environmental Protection Agency secured from this Court a warrant pursuant to 42 USC § 6927 allowing entry, inspection, photographing and sampling of the soils and water on and under the North and South Works.

12. On May 27, 1981, the State of Michigan and its DNR obtained from the 27th District Court, 1st Division, for the County of Wayne, a warrant allowing entry, inspection, and sampling of the soils and water on and under the North and South Works.

13. In June of 1981, the DNR began a hydrogeological investigation at the North and South Works. Sediments and groundwater samples were collected from various sites on these two parcels. Site number one is an open area just south of the polyol process facility on the North Works. Site number two is the old coke production and bi-products area, and is just east of site number one on the North Works. Site number three is an elevated area used for land disposal southwest of a coal pile on the North Works. Sites 4 and 5 are open areas on the south end of the North works and are just west of the large brine storage pond. Site number six is located on the southeast portion of the South Works. Site number seven is at the north end of the South Works. Site number eight is north and west of site six on the South Works. These site locations are shown with greater specificity

in Exhibit B. In addition, soil and groundwater samples were collected from the "drum pad" located northwest of the Pilot Plant on the North Works and from the "Emergency Containment Pond" located on the east side of the Pilot Plant. Other samples were collected from the "polyol pond", a small pond of liquid wastes located near the polyol process plant on the North Works and connected to the polyol process area by a small trench.

14. Analysis of the samples collected in June of 1981 from the above-described sites on the North and South Works indicates that the soils, surface water and groundwater are subject to serious chemical contamination. The results of that sampling are set forth in Exhibit C, tables 1 through 5.

15. The groundwater under the North and South Works flows into the Trenton Channel of the Detroit River. Surface water on these sites runs into the Trenton Channel of the Detroit River during periods of heavy rain.

16. The hazardous chemicals which contaminate the soil, groundwater and surface water at the North and South Works are moving and will continue to move off-site into the Trenton Channel of the Detroit River unless corrective measures are taken. The contamination of the soil, groundwater and surface water on and under the North and South Works is

the result of hazardous chemicals which were placed, dumped or spilled on-site by BASF.

17. The Detroit River in the vicinity of the North and South Works has been designated for total body contact recreation. 1979 Michigan Administrative Code, Vol 1, R 323.1110.

18. The Detroit River downstream from the North and South Works is used extensively by the public for swimming, fishing, and boating.

19. The Detroit River flows into Lake Erie which is a source of public drinking water.

20. Some of the hazardous chemicals which contaminate the soil, groundwater, and surface water on and under the North and South Works are described in paragraphs 21 through 36 of this Complaint. An acute toxicity table describing various aspects of these contaminants is attached as Exhibit D.

21. Styrene was found in the groundwater at sites 1 and 5 in concentrations from 45 to 730 micrograms per liter (ug/l). Styrene is toxic to land and aquatic organisms.

Available data indicates that this chemical is carcinogenic to mice, causing an increased incidence of lung tumors. Styrene is mutagenic, having been shown to cause damage to DNR of test organisms.

22. Benzene was found in the groundwater at sites 1, 2, 4 and 5 in concentrations ranging from 13 to more than 200,000 ug/l. Benzene is designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act, 33 USC 1317(a)(1). 43 Fed. Reg. 4108. Benzene is toxic to terrestrial life by ingestion, and highly toxic to aquatic organisms. It has also been shown to cause severe adverse effects on the blood forming organs, resulting in hyperplastic anemia, and decreased red and white blood cell counts. Inhalation exposure of experimental animals to benzene during pregnancy has resulted in birth defects. Benzene has been shown to cause leukemia after prolonged occupational exposures. The International Agency For Research On Cancer (IARC) has determined that there is sufficient evidence to indicate that benzene is carcinogenic to humans.

23. Hexachlorobenzene (HCB or C-66) was found in the groundwater at site 7 in concentrations ranging from 140 to 435,000 ug/l. Chlorinated benzenes are designated as toxic pollutants under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. HCB has been shown to be carcinogenic in mice

and hamsters. HCB is toxic to land and aquatic organisms and is extremely persistant in the environment.

24. Hexachlorobutadiene was found in the groundwater and sediments at sites 1 and 7 in concentrations from 0.10 to 800,000 parts per billion (ppb). Hexachlorobutadiene is designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. Hexachlorobutadiene is a potential animal carcinogen and has been shown to cause kidney tumors in laboratory rats. It is toxic to mammals and extremely toxic to aquatic life. Chronic exposures result in kidney damage in animals.

25. Chloroform was found in the groundwater at sites 1, 7 and 8 in concentrations from 4 to 100 ug/l. Chloroform is designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. Chloroform has been found to cause liver tumors in mice and renal tumors in rats, and is considered an animal positive carcinogen. Chloroform has also been found to cause birth defects in rats exposed to vapors during pregnancy. Toxicological effects from chloroform poisoning include central nervous system (CNS) depression, liver toxicity, and renal damage.

26. Tetrachloroethylene was found in the groundwater at site 7 in concentrations from 15,000 to 19,000 ug/l. Tetrachloroethylene is designated as a toxic pollutant under

§ 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. Tetrachloroethylene has been shown to cause liver cancer in laboratory mice and is considered a potential animal carcinogen. It is toxic to animals and fish.

27. Trichloroethylene (TCE) was found at site 7 in the groundwater at concentrations from 2 to more than 320,000 ug/l. TCE is designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. TCE has been shown to induce cancer in laboratory mice. Ingestion and inhalation of TCE has been shown toxic to terrestrial life. TCE is acutely toxic to aquatic life.

28. Vinyl Chloride (VC) was found in the groundwater at site 7 at a concentration of 890 ug/l. VC is designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. VC is a human carcinogen. It has been shown to cause a rare form of liver cancer in occupationally exposed workers and in laboratory animals.

29. Benzo (a) Pyrene and Benzo (a) Anthracene were found in the groundwater and soils at Site 2 and the drum pad site in concentrations from 14 to 2,700 ppb. These two chemicals are polynuclear aromatic hydrocarbons (PAH's). PAH's have been designated as toxic pollutants under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. PAH's

have been shown to induce cancer in experimental animals. PAH compounds in general have been classified as human health hazards due to their potential for inducing malignant transformations. Regenerative tissues such as intestinal epithelium, bone marrow, and those in lymphoid organs, and testes, are preferred target organ tissues for PAH effects. Signs of toxicity are generally not seen at doses less than those which produce a high tumor incidence.

30. Polychlorinated Biphenyls (PCB's) were found in the soils of the emergency containment pond in concentrations of 5.5 parts per million. PCBs are designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. PCB mixtures have been shown to induce liver cancer in mice and rats. PCB mixtures may have mutagenic potential. PCBs are extremely persistent in the environment and have been shown to be highly bioaccumulative in the food chain.

31. Arsenic was found at site 3 and 5 in the groundwater in concentrations from 20 to 2,000 ug/l. The National Interim Primary Drinking Water Standard for arsenic is 50 ug/l. Arsenic is designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. Arsenic is a human carcinogen, causing increased incidences of skin and lung cancer in exposed populations. Other

effects include peripheral neuropathy and peripheral vascular disorders such as black foot which is seen in Taiwan in areas with high arsenic concentrations in the drinking water. Arsenic compounds have been shown to readily cross the placenta in humans and test mammals, causing fetal toxicity and malformations. Arsenic is highly toxic to fish and other aquatic life.

32. Hexavalent Chromium was found at sites 2 and 4 in the groundwater in concentrations ranging from 120 to 550 ug/l. Chromium is designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. Hexavalent Chromium is generally recognized as the more toxic form of chromium. The Ambient Water Quality Criterion recommended for hexavalent chromium is 50 ug/l, which is identical to the National Interim Primary Drinking Water Standard. 45 FR 79331. The primary adverse effects seen from acute overexposures to chromium are to the kidney, as tubular necrosis.

33. Toluene was found at sites 1, 4 and 5 in the groundwater at concentrations from 610 to 40,000 ug/l. Toluene is toxic to laboratory animals and to fish and has been designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. For the protection of human health from the toxic properties of toluene ingested

through water and contaminated aquatic organisms, the Ambient Water Quality Criterion has been determined to be 14.3 mg/l. 45 FR 79340.

34. Xylene was found at sites 4 and 5 in the groundwater in concentrations of 400 to 60,000 ug/l. Occupational exposure to xylene has resulted in immunological disorders and menstrual problems in females. Xylene has also been associated with an increased incidence of cleft palate in offspring of rats which were exposed to orally administered xylene during pregnancy. Xylene is toxic to fish.

35. Lead was found in the groundwater at sites 1 and 4 in concentrations of 120 to 200 ug/l. Lead is designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. The Ambient Water Quality Criterion for lead is identical to the existing drinking water standard which is 50 ug/l. 45 Fed. Reg. 79336. Some toxic effects associated with lead poisoning in humans include anemia, severe intestinal cramps, impaired motor and psychomotor function, paralysis, anorexia, and fatigue. Permanent nerve damage occurs in children with acute encephalopathic lead poisoning in at least 25% of the cases. Chronic exposures to lead have been reported to inhibit hemoglobin synthesis. Women are reported to be more suseptible to the toxic effects

of lead than men, especially the central nervous system effects. Lead is toxic to aquatic life.

36. Mercury was found at site 6 in the groundwater in concentrations ranging from 1,600 to 7,500 ug/l. Mercury is designated as a toxic pollutant under § 307(a)(1) of the Clean Water Act. 43 Fed. Reg. 4108. For the protection of human health from the toxic properties of mercury ingested through water and contaminated aquatic organisms, the Ambient Water Quality Criterion is determined to be 0.144 ug/l. 45 Fed. Reg. 79337. Mercury is toxic to humans. The National Interim Primary Drinking Water Standard for mercury is 2 ug/l. Mercury is corrosive to the skin and mucous membranes. The kidney is the major target organ following inhalation of elemental mercury. Mercury causes central nervous system damage and accumulates in nerve tissue.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT

37. The preceding paragraphs of this Complaint are incorporated by reference.

38. Some of the chemical wastes which contaminate the soils, groundwater and surface water of the North and South Works are hazardous substances as defined in § 101 of CERCLA, 42 USC 9601.

39. Hazardous substances are presently being released or threaten to be released from the North and South Works within the meaning of "release" as defined in § 101 of CERCLA.

40. The North and South Works are a facility as that term is defined in § 101 of CERCLA.

41. BASF is the owner and operator of a facility from which there is a release, or a threatened release, of a hazardous substance.

42. BASF owned or operated the North and South Works at the time of disposal of the hazardous substances on those sites.

43. The waters of the Trenton Channel, the Detroit River, and Lake Erie, as well as the aquatic life therein and the underlying lands, are natural resources managed and controlled by the State of Michigan in the public trust.

44. The groundwaters under the North and South Works are natural resources managed and controlled by the State of Michigan in the public trust.

45. The disposal of hazardous substances at the North and South Works has injured, destroyed, and caused the loss of natural resources owned, managed or controlled by the State

of Michigan in the public trust and has necessitated remedial action by the State of Michigan.

46. To assess the releases and threatened releases of hazardous substances from the North and South Works, the State has incurred and continues to incur substantial expenses and response costs.

47. § 107 of CERCLA, 42 USC § 9607, provides in pertinent part as follows:

> "(a) Notwithstanding any other provision or rule of law,...
>
> (1) The owner and operator of...a facility,
>
> (2) Any person who at the time of disposal of any hazardous substance owned or operated any facility at which hazardous substances were disposed of,
>
> (3) Any person who by contract, agreement, or otherwise arranged for disposal...of hazardous substances owned or possessed by... any other party or entity, at any facility owned or operated by another party or entity..., and
>
> (4) Any person who accepts or accepted any hazardous substances for transport to disposal...facilities or sites selected by such person, from which there is a release, or a threatened release which causes the incurrence of response costs, of a hazardous substance; shall be liable for
>
> (A) All costs of removal or remedial action incurred by the United States government or a State not inconsistent with the national contingency plan;

(B) Any other necessary costs of response incurred by any other person consistent with the national contingency plan; and

(C) Damage for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction or loss resulting from such release."

BASF is liable for all damages sought by Plaintiffs in this action under CERCLA.

RESOURCE CONSERVATION AND RECOVERY ACT

48. The preceding paragraphs of this Complaint are incorporated by reference.

49. The State is a person under § 1004 of RCRA, 42 USC 6903 and is entitled to sue pursuant to 42 USC § 6972.

50. Some of the chemicals contaminating the soils, groundwater and surface water of the North and South Works are hazardous wastes as defined in 42 USC § 6903.

51. BASF used the North and South Works for the disposal of hazardous wastes; the term "disposal" is defined in 42 USC § 6903.

52. The North and South Works has been operated by BASF as a facility for disposal of hazardous substances,

without a permit, in violation of 42 USC § 6925, and without notification to the administrator, in violation of 42 USC § 6930.

53. The unlawful disposal by BASF of hazardous wastes on the North and South Works presents an imminent and substantial endangerment to health and the environment.

MICHIGAN WATER RESOURCES COMMISSION ACT, 1929 PA 245, MCL 323.1 et seq, MSA 3.521 et seq.

54. The preceding paragraphs of this Complaint are incorporated by reference.

55. BASF's disposal of chemical wastes and the resulting contamination of the waters on and under the North and South Works and the Trenton Channel of the Detroit River are in violation of a § 6 of the Water Resources Commission Act which provides in part as follows:

> "It shall be unlawful for any persons directly or indirectly to discharge into the waters of the state any substance which is or may become injurious to the public health, safety or welfare; or which is or may become injurious to domestic, commercial, industrial, agricultural, recreational, or other uses which are being or may be made of such waters; or which is or may become injurious to the value or utility of riparian lands; or which is or may become injurious to livestock, wild animals, birds,

> fish, aquatic life, or plants or the growth or propagation thereof be prevented or injuriously affected; or whereby the value of fish and game is or may be destroyed or impaired."

56. BASF's disposal of chemical wastes and the resulting contamination of the waters on and under the North and South Works and the Trenton Channel of the Detroit River were without permit and are in violation of § 7 of the Water Resources Commission Act which provides in part as follows:

> "After April 15, 1973, a person shall not discharge any waste or waste effluent into the waters of this state unless he is in possession of a valid permit therefor from the commission."

57. Pursuant to § 10 of the Water Resources Commission Act, Plaintiffs are entitled to relief from violations thereof, including recovery of the full value of the injuries done to the natural resources of the State and the costs of surveillance and enforcement by the State resulting from the violation; Plaintiffs are also entitled to injunctive relief to restrain violations and to require compliance with the Act, and civil penalties of not more than Ten Thousand Dollars ($10,000.00) per day for each violation.

MICHIGAN ENVIRONMENTAL PROTECTION ACT (MEPA) 1970 PA 127, MCL 691.1201 ET SEQ; MSA 14.528(201).

58. The preceding paragraphs of this Complaint are incorporated by reference.

59. In Const 1963, Article 4, §§ 51 and 52, the people of the State of Michigan have commanded:

> "Sec. 51. The public health and general welfare of the people of the state are hereby declared to be matters of primary public concern. The legislature shall pass suitable laws for the protection and promotion of the public health."
>
> Sec. 52. The conservation and development of the natural resources of the state are hereby declared to be of paramount public concern in the interest of the health, safety and general welfare of the people. The legislature shall provide for the protection of the air, water and other natural resources of the state from pollution, impairment and destruction."

60. In response to that charge, the Michigan Legislature enacted the Thomas J. Anderson, Gordon Rockwell Environmental Protection Act, 1970 PA 127, supra, "for the protection of the air, water and other natural resources and the public trust."

61. Plaintiffs are entitled to maintain this action under § 2 of MEPA, MCL 691.1202; MSA 14.528(202).

62. This Court may grant equitable and other relief required to protect the air, water and other natural resources or the public trust therein from pollution, impairment or destruction pursuant to § 4 of MEPA, MCL 691.1024; MSA 14.528(204).

63. MEPA imposes a duty on BASF to prevent or minimize degradation of the environment.

64. BASF has failed to monitor, safeguard, contain or remove the hazardous substances so as to prevent their release from the North and South Works.

65. BASF's disposal of chemical wastes and the resulting contamination of the waters on and under the North and South Works and the Trenton Channel of the Detroit River constitute a violation of the policy enunciated in Constitution 1963, Article 4, §§ 51 and 52 and a violation of the provisions of MEPA, supra; and are in violation of Defendant's duty to prevent or minimize harm to the environment. Equitable action is therefore necessary to prevent pollution, impairment, and destruction of the water resources of the State of Michigan.

COMMON LAW NUISANCE

66. The preceding paragraphs of this Complaint are incorporated by reference.

67. BASF's disposal of chemical wastes and the resulting contamination of the waters on and under the North and South Works and the Trenton Channel of the Detroit River constitute a public nuisance which injures and continues to threaten the natural resources and the health, safety, and welfare of the people of the State of Michigan.

VIOLATION OF THE PUBLIC TRUST

68. The preceding paragraphs of this Complaint are incorporated by reference.

69. The surface waters of the Trenton Channel of the Detroit River, the Detroit River and Lake Erie, the lands underlying such waters, and the fish and aquatic organisms contained therein, are natural resources within the public trust.

70. The groundwaters of the State of Michigan are natural resources within the public trust.

71. These Plaintiffs have the responsibility to ensure that the public trust is protected and to seek compensation for any diminution in the public trust corpus.

72. BASF's disposal of chemical wastes and the resulting contamination of the waters on and under the North and South Works and the Trenton Channel of the Detroit River, constitute a continuing impairment of the public trust.

UNJUST ENRICHMENT

73. The preceding paragraphs of this Complaint are incorporated by reference.

74. BASF was unjustly enriched and shifted its cost of doing business onto the people of the State of Michigan by unlawfully disposing of chemical wastes on and under the North and South Works.

75. These Plaintiffs are entitled to restitution to the extent that Defendant was unjustly enriched by unlawfully disposing of chemical wastes on and under the North and South Works.

RELIEF

WHEREFORE, Plaintiffs request this Honorable Court to provide the following relief:

A. Issue an Order immediately enjoining Defendant from allowing or causing the disposal or discharge of any hazardous waste into the ground, groundwater, and surface water on, under, and adjoining the North and South Works;

B. Issue an order immediately enjoining Defendant from altering any part of the North and South Works without the approval of the DNR;

C. Issue an Order directing the Defendant to prevent the further spread of hazardous waste into the Trenton Channel of the Detroit River from the North and South Works by accomplishing measures, according to a plan and schedule submitted to the DNR for its approval within fifteen (15) days of the entry of the order of the Court;

D. Issue an Order directing the Defendant to abate hazardous waste soil contamination on the North and South Works by accomplishing measures, including the following, according to a plan and time schedule developed by a qualified consultant and submitted to the DNR for its approval within thirty (30) days of the entry of the order of the Court:

1) identification of all areas used by Defendant for the disposal of chemical and industrial wastes, or those sites where chemical products or wastes were spilled or lost to the soil, groundwater or surface water, on and near the North and South Works, and the character and quantities of all chemical and industrial wastes disposed of at those areas;

2) excavation of all buried hazardous wastes from the identified areas;

3) determination of the extent of contamination of soil, surface water, and/or groundwater at the North and South Works with hazardous wastes;

4) excavation of soil to the extent determined necessary by DNR;

5) handling, repackaging, transportation, and disposal of excavated hazardous wastes and soil in an environmentally sound manner approved by DNR;

E. Issue an Order directing the Defendant to repair and clean up the groundwater contaminated with hazardous wastes placed on the North and South Works according to a plan and schedule developed by a qualified consultant and submitted to DNR for its approval within thirty (30) days of the entry of the order of the Court. The consultant's plan and schedule shall be based upon a study by it which includes, but is not limited to, investigation of the following:

1) the nature and extent, both vertically and horizontally, of groundwater contamination with hazardous wastes under and surrounding the North and South Works;

2) groundwater flow, velocity, and direction;

3) the various waterbearing strata and the extent of their contamination;

4) proper location of monitoring wells;

5) remedial measures, including, but not limited to, the construction of a DNR-approved system for the collection, treatment, and removal/ disposal of any collected surface or groundwater contaminated with hazardous wastes.

F. Issue an Order directing the Defendant to repair and clean up the parts of the Trenton Channel of the Detroit River which are contaminated with hazardous wastes placed on the North and South Works, according to a plan and schedule submitted to DNR for its approval within ninety (90) days of the entry of the order of the Court, such plan and schedule to be based upon a monitoring and sampling study of water, sediments, and aquatic species in the Trenton Channel;

G. Issue an Order directing the Defendant to report weekly to DNR, in writing, on the progress of all studies, data collected, and remedial actions listed above;

H. Issue an Order directing the Defendant to permit the Plaintiffs, their agents and contractors, to enter and inspect the North and South Works, to monitor remedial activities, to take samples of soil, groundwater, surface water, and chemical wastes at the site, and to undertake any other necessary activity related to the clean-up of hazardous wastes from the site;

I. Issue an Order directing the Defendant to record a notation on the deed to the North and South Works or on any other instrument normally examined during a title search that will notify the public that the site has been used as a hazardous chemical and industrial waste dump and that its future use is restricted to activities that will not disturb the integrity of the final cover, or any containment system;

J. Issue an Order directing the Defendant to immediately obtain a bond of one million dollars ($1,000,000.00) against insolvency to insure that funds will be available to finance measures ordered in Paragraphs A through F.

K. Issue an Order directing Defendant to reimburse Plaintiffs for all expenses incurred by Plaintiffs during the investigation of the contamination originating from Defendant's property;

L. Impose a civil penalty upon Defendant of ten thousand dollars ($10,000.00) for each day of its pollution, impairment, and destruction of the environment;

M. Issue an Order directing Defendant to pay damages in whatever amount Plaintiffs are found entitled to compensate the people and the State of Michigan for the pollution, impairment and destruction of the environment and the injury to the natural resources caused by Defendant's discharge of hazardous and toxic substances into the waters of this State;

N. Award Plaintiffs attorney fees and all costs of this action, including the costs of salaries paid State

employees for the investigation and enforcement of this litigation;

O. Issue an Order directing Defendant and its agents and employees, to scrupulously comply with all federal and state statutes, rules and regulations, and orders and permits governing its operations;

P. Enter judgment against Defendant requiring it to reimburse Plaintiffs for:

a. All past, present and future damages to the groundwater, the Detroit River, and other natural resources of the State, resulting from contamination on and emanating from the North and South Works; and

b. All costs and expenses incurred or to be incurred by the State for its response, including costs of removal or remedial action, to contamination on and emanating from the North and South Works.

Q. That this Court retain jurisdiction in this matter until such time as all remedial measures have been effectuated and for a suitable monitoring period thereafter; and

R. Any other relief as the Court shall deem equitable, proper and just.

Respectfully submitted,

FRANK J. KELLEY
Attorney General

Stewart H. Freeman
Assistant Attorney General
In Charge

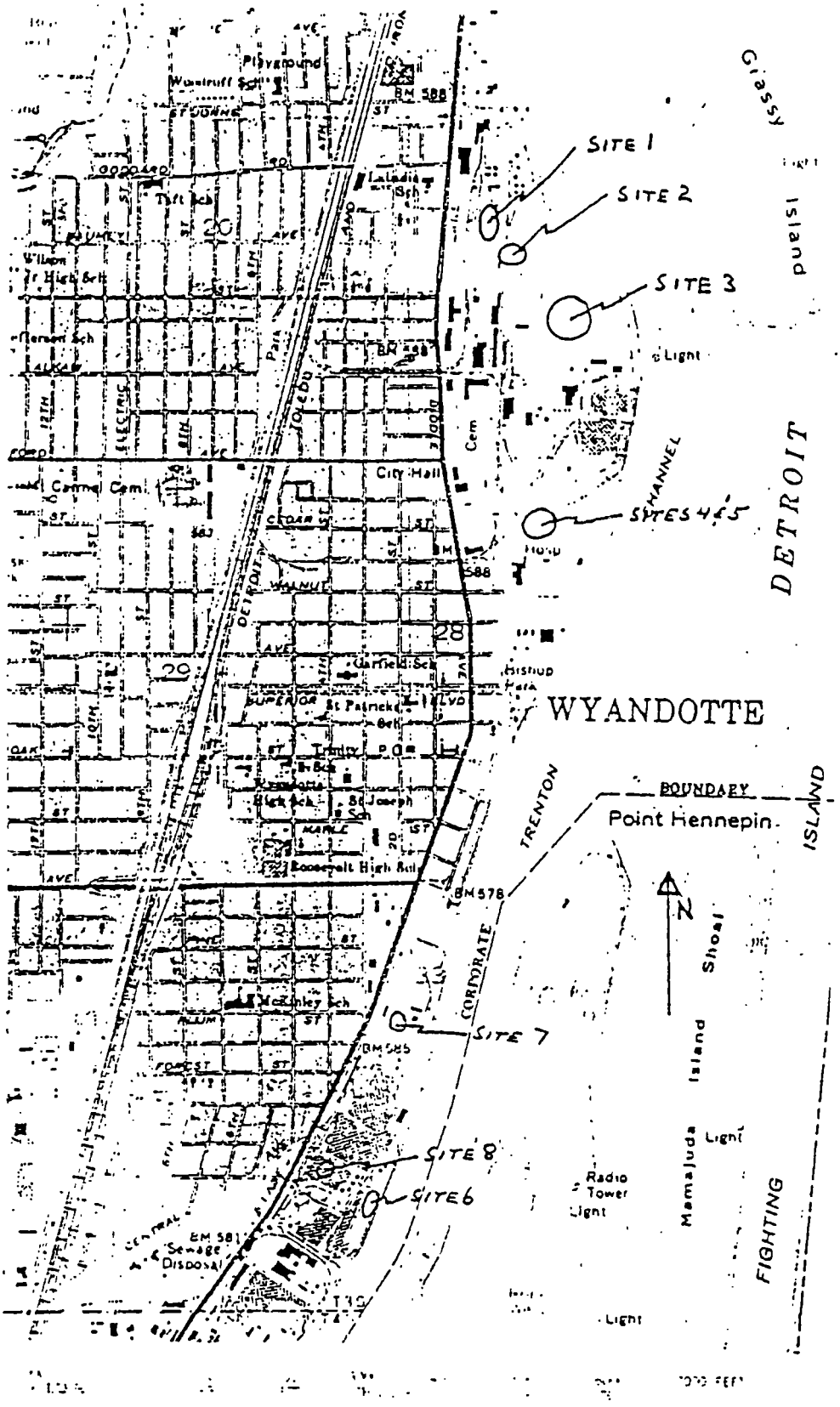
Stephen F. Schuesler
Assistant Attorney General
Environmental Protection Division
720 Law Building
Lansing, MI 48913
(517) 373-7780

Dated: OCT 31 1983

COUNTY OF WAYNE ASSESSMENT ROLL FOR THE CITY

PROPERTY NUMBER / TAXPAYER	DESCRIPTION	CL EX
57 023 99 0001 000 L S F WYANDOTTE CORP 9 BIDDLE AVE YANDOTTE MI 48192	04925 PART OF SE 1/4 FRAC SEC 32 T3S R11E. BEG AT INT OF CEN LINE OF GROVE ST 80FT WIDE WITH ELY LINE OF BIDDLE AVE 120FT WIDE TH ELY 35.79FT TH NLY 703.3FT TH S64DEG 58M 19S E 627.9FT TH S1DEG 08M 36S W APPROX 180FT TH S31DEG 25M W APPROX 830FT TH N54DEG 49M W1173.68FT TH N 5DEG 07M E 404.56FT TH N15DEG 19M E APPROX 797FT TH ALONG A CURVE CONCAVE TO SE ARC 494.02FT RAD 4750.71FT POB EXC THEREOF 2.65 AC OF WYANDOTTE TOWN RD ROW 59.44 AC X 59.44	I
57 008 99 0005 000 TE CORP TAX LL RD NJ 07054	16258 PT OF FRAC SEC 21 AND 28 T3S R11E DESC AS BEG AT INTER OF N LINE OF FORD AVE 66FT WD AND BIDDLE AVE 120FT WD TH NLY ALONG E LINE OF BIDDLE TO S LINE OF PERRY PLACE 50FT WD TH ELY ALONG S LINE OF PERRY PLACE TO U.S. HARBOR LINE TH S29DEG 51M 7S E 2161FT TH S13DEG 16M 34S E 1045.30FT TH S9DEG 20M 36S W 1244.80FT TH S13DEG 52M 50S W 1220FT MORE OR LESS TH S85DEG 10M 25S W 446.09FT TH N10DEG 31M 34S W 206.43FT TH S86DEG 29M 26S W 429.88FT TH S5ODEG 29M 19S W 274.58FT TH S12DEG 29M 56S W 127.07FT TH WLY 440.32FT TO E LINE OF BIDDLE AVE TH N11DEG 17M 56S W 610.84FT TH N78DEG 42M 05S E 385.06FT TH N1DEG 0°M 35S W 1132.59FT TH S89DEG 51M 24S W 362FT TH S1DEG 08M 36S E 605FT TH WLY 124.24FT TO POB EXC LAND USED BY W.T.R.R. 233.15 AC 233.15 K 233.15	

EXHIBIT A



BASF Wyandotte Corporation
Site Locations

EXHIBIT B

EXHIBIT C

TABLE 1
MDNR - ORGANIC/INORGANIC WATER SAMPLE ANALYSES
BASF WYANDOTTE NORTH AND SOUTH WORKS
Wyandotte, Michigan

Parameter (ug/l)	Site #1	Site #2	Site #3	Site #4	Site #5	Site #6	Site #7	Site #8
Styrene	730				45			
Benzene	920	13		1100->200,000	2300			
Toluene	1900-8000			40,000	610			
Xylene				750-60,000	400			
HCB	0.29			0.25			0.13-29	0.48
Naphthalene				21			1300	
Phenanthrene							170	
Fluorene							400	
CHCl=CHCl							4-20,000	
TCE							2->50,000	
$CH_2Cl-CH_2Cl-CH_3$						TR	TR-260	
$CHCl_3$	4-100							31
PCE							15,000	
HCBD	0.10						0.15-380	0.15
DISS CR	<50	<50-550	<50	120-250	<50	<50	<50	<50
CU	<20	100	50-300	<50	<50	20	<20-430	<20-25
NI	<50	<50	<50	70-100	<50	130-650	<50-60	<50
PB	<50-60	<50	<50	160-200	<50	<50	<50-110	<50
ZN	<50-3900	1400	430	180-4400	<50	1100	190-3100	50-390
CD	<20	<20	<20	<20	<50	<20	<20	<50
Hg	<1					1600-7500	<1	<1
CA	23-340		85					
MG	<1-9		4					
NA	27-160		4800					
K	<1.9-190		350					
FE	<100-200		<100-4300	18,000-22,000				
Phenol	7NA-8NA	32NA-240NA	2NA-660NA			150PT-310PT	10NA-170PT	3NA-16NA

NA - Analytical method not approved by lab.
PT - Preservation Technique not used.
TR - Trace present.

TABLE 2
MDNR - ORGANIC/INORGANIC SEDIMENT ANALYSES
BASF WYANDOTTE NORTH AND SOUTH WORKS
Wyandotte, Michigan

	Parameter	Site #1	Site #2	Site #3	Site #4	Site #5	Site #6	Site #7	Site #8
ug/l	Naphthalene				550				
	Anthracene				10			70	
	Phenanthrene				37			420-21,000	
	HCB							780-430,000	
	Fluorene							48,000->109,000	
	Benzoanthrene							660	
	Pyrene							1100	
	HCBD							1200-800,000	
ug/kg	CD		<2	<2			<2	<2	<2
	CR		18	18			14-20	20	11
	CU		27	25			13-20	16	6
	NI		18	15			7-20	13	7
	PB		21	25			<5-40	<5	<5
	ZN		40	120			10-60	6	15
	HG						<5-16	<	<.5

TABLE 3
U.S. EPA INORGANIC CHEMICALS
BASF WYANDOTTE
Wyandotte, Michigan
Water

Parameter	Site #1	Site #3	Site #5	Site #7	Site #6
Aluminum	750	8100-15,900	800	1800	
Chromium	<10	<20-30	<10	<10	
Barium	120	20	90	2110	
Beryllium	<2	<4-2	<2	<2	
Cadmium	<5	<10	<5	<5	
Cobalt	<10	<20-40	<10	<10	
Copper	<20	200-380	40	40	
Iron	440	4120-5140	11,040	13,000	
Lead	120	<80-80	<40	<40	
Nickel	<20	20-220	<20	<20	
Manganese	<10	90-120	160	70	
Zinc	5520	440-4040	2650	4120	
Boron	30	40-500	920	150	
Vanadium	<10	180-1430	<10	<10	
Calcium	255,000	22,300-37,000	914,000	21,600,000	
Magnesium	200	2900-2920	754,000	1400	
Sodium	137,000	3,640,000-19,200,000	6,240,000	12,300,000	
Arsenic	<10	9.2-2000	20	<100	
Antimony	<20	<20	<20	<20	
Selenium	<10	<100	<400	<400	
Thallium	<10	<10	<400	<100	
Mercury	<1	<1	<1	<1	300-2000
Tin	<20	*	<20	<20	
Silver	<20	<40	<20	<20	
Cyanide	0.09	2.2-8.7	0.26	--	
Organic Mercury				<10	100-5000

*Interference

TABLE 4
U.S. EPA ORGANIC CHEMICALS
BASF WYANDOTTE
Groundwater

Parameter (ug/l)	Site #1	Site #2	Site #3	Site #4	Site #5	Site #6	Background Well for Site #7	Site #7	Polyol Pond
2,4-dimethyphenol	4400								
phenol	120		175	260		25		51-65	
naphthalene	12	120		520					
benzene	160-930	16		1100	1100				
ethylbenzene	11-34			12	12				
toluene	>1000-2300			750	750				
1,2 dichloropropane	12							13	
acenaphthene		26							
fluoranthene		23							
benzo(a)anthracene		22							
benzo(a)pyrene		14							
3,4 benzofluoranthene		13							
benzo(k)fluoranthene		13							
chrysene		22							
anthracene		44							
fluorene		20							
phenanthrene		44							
pyrene		17							
bis (2-ethylhexyl phthalate						19			1.0
bis (2-chloroisopropyl ether			280						
1,2 dichloroethane								12	
chloroform								19	
1,1-dichloroethylene								2600	
1,2-trans-dichloroethylene								29,000	
methylene chloride									
tetrachloroethylene								19,000	
trichloroethylene								320,000	
vinyl chloride								890	
2-nitrophenol			29			45			
4-nitrophenol			61			130			
hexachlorobenzene								140-150	
hexachlorobutadiene								220-240	

TABLE 5
U.S. EPA ORGANIC CHEMICALS
SOILS ON SITE
BASF WYANDOTTE NORTH AND SOUTH WORKS
Wyandotte, Michigan

Parameter (ug/g)	Site #3	Emergency Containment Pond	Drum Pad Site (ppm)
bis (2-ethylhexyl) phthalate	ND	12	4.6
d-n-butyl phthalate	ND	48-93	
toluene	ND	9.8-15	
PCB-1242		5.5	
bis-(2-chloroisopropyl ether)	ND	99	
methylene chloride	ND	1.3-5.0	
fluchloralin			940
trifuralin	ND		
phenanthrene/anthracene	ND		7
fluolanthene/pyrene	ND		32
chrysene/benzo(a)anthracene	ND		47.2
benzo(a)pyrene	ND		2.7
nitrosamines	ND		
toxaphene		0.40	

ID: Insufficient Data
NAD: No Available Data

Chemical Name	CAS #	CMR Listed	Acute Toxicity: Terrestrial Life LD_{50}	Acute Toxicity: Aquatic Data	Carcinogen	Teratogen	Mutagen	Chronic Effects	Environmental Fate
Styrene	100-42-5	yes	oral rat 1000-5000 mg/kg inhal. mouse LC_{50} 11,800-21,000 mg/m^3	96 hr LC_{50} fish 25-65 mg/l 48 hr EC_{50} Daphnia 23 mg/l	Potential Animal	ID	Potential	Neurological & physical disturbances; embryo toxicity	
Benzene	71-43-2	yes	oral 3000-5700 mg/kg	96 hr LC_{50} juvenile Rainbow trout 5.3 mg/l 48 hr EC_{50} 265 mg/l	Human . Positive	Confirmed via inhalation	ID	Affects blood forming organs w/resulting blood disorders; neurol. disorders; embryo toxicity	Calculated BCF: 5.21
Hexachlorobenzene	118-74-1	yes	oral 1700-10,000 mg/kg	96 hr LC_{50} fish 2.3-22 mg/l	Animal Positive	ID	ID	Kidney & ovarian follicle degeneration	Does not degrade in the environ. S.S. BCF: 22,000
Chloroform	67-66-3	yes	oral 120-1750 mg/kg inhal. LC_{50} 28,000 ug/l	96 hr LC_{50} fish 15.1-75.0 mg/l 48 hr EC_{50} Daphnia 28.9 mg/l	Animal Positive	Potential via inhalation - ID via oral	ID	Liver & kidney damage by chronic exposures	S.S. BCF: 6
Tetrachloroethylene	127-18-5	yes	oral rat 4460 mg/kg inhal. LC_{50} 35,000 mg/m^3	96 hr LC_{50} fish 4.8-18.4 mg/l 48 hr EC_{50} Daphnia 18 mg/l	Potential Animal	ID	ID	Liver toxin Kidney damage	BCF: 49
Hexachlorobutadiene	87-68-3	yes	oral 64-350 mg/kg dermal 1206-4330 mg/kg	96 hr LC_{50} fish 0.09-0.32 mg/l	Potential Animal	ID	ID	Kidney damage	Adsorbs to soil & humus particles in water

EXHIBIT D

ID: Insufficient Data
NAD: No Available Data

Chemical Name	CAS #	CMR Listed	Acute Toxicity: Terrestrial Life LD_{50}	Acute Toxicity: Aquatic Data	Carcinogen	Teratogen	Mutagen	Chronic Effects	Environmental Fate
Bis (2-ethyl-hexyl) phthalate	117-81-7	yes	oral 30,600-33,900 mg/kg	48 hr EC_{50} Daphnia 11 mg/l	Animal Positive	Potential	ID	Testicular damage; liver & kidney effects	
Trichloro-ethylene	79-01-6	yes	oral 2800-5900 mg/kg inhal. LC_{50} 42,960-263,000 mg/m^3	96 hr LC_{50} fish 4.8-18.4 mg/l 48 hr EC_{50} Daphnia 8.5-17.7 mg/l	Potential Animal	ID	ID	CNS depression; liver & kidney damage	Rapidly volatilized from water, photo-oxidized in atmos.
Vinyl Chloride	75-01-4	yes	oral rat 500 mg/kg	ID	Human Carcinogen	ID	Potential	Kidney damage; embryo toxicity via inhalation	Highly volatile in wtr; hydrolyzes then decomposes in atmos.
Methylene Chloride	75-09-2	no	oral 2000-2136 mg/kg inhal. LC_{50} 15,000 ppm	96 hr LC_{50} fish 193-224 mg/l 48 hr EC_{50} Daphnia 224 mg/l	Potential Animal	ID	Potential	Elevated carboxy-hemoglobin in blood; central nervous system depression	Volatilize from wtr with photo-degradation
1,2-Dichloro-ethane	107-06-2	yes	oral 965 mg/kg dermal 4620 mg/kg inhal. LC_{50} 4050-48,600 mg/m^3	96 hr LC_{50} fish 118-550 mg/l 48 hr EC_{50} Daphnia 218 mg/l	Animal Positive	ID	Potential	Blood clotting disorders; liver & kidney damage	
Toxaphene	8001-35-2	yes	oral 80-90 mg/kg dermal 1075 mg/kg inhal. LC_{50} 20 mg/m^3 (2 hr)	96 hr LC_{50} fish all <1.0 mg/l	Animal Positive	ID	Potential	Liver damage; toxic to dams during pregnancy	Half-life in soil 3-13 yrs. BCF: 20,733

ID: Insufficient Data
NAD: No Available Data

C. ...cal Name	CAS #	CMR Listed	Acute Toxicity: Terrestrial Life LD_{50}	Acute Toxicity: Aquatic Data	Carcinogen	Teratogen	Mutagen	Chronic Effects	Environmental Fate
Benzo(a) pyrene	50-32-8	no	ID	ID	Animal Positive	ID	Potential	Damage to regenerative tissues	
Benzo(a) anthracene	56-55-3	no	ID	ID		ID	ID	Damage to regenerative tissue	
Cadmium	7440-43-9	yes	oral 175-225 mg/kg	for various salts 96 hr LC_{50} fish <1.0 mg/l	ID	ID	ID	Kidney is the target organ for toxicity	
...senic	7440-38-2	yes	oral Arsenate (V) rats & mice approx. 100 mg/kg oral Arsenate (III) rats & mice approx 10 mg/kg	96 hr LC_{50} fish 13.3-42 mg/l	Human Carcinogen	Potential	Potential	Peripheral vascular & neurological disorders; hyperpigmentation & keratoses	
Chromium	7440-47-3	yes	Varies due to chemical state	Hexavalent 96 hr LC_{50} fish 37-133 mg/l	Carcinogenic via inhalation	ID	(Hex) Potential (Tri) ID		
Beryllium	7440-41-7	yes	oral mice & rats approx 100 mg/kg as fluoride	96 hr LC_{50} fish (soft water) <1.0 mg/l	Animal Carcinogen via inhal.; limited human data	ID	ID	Lung disease	
Nickel	7440-02-1	yes	oral (acetate) 350-410 mg/l (nitrate) 1620 mg/kg	96 hr LC_{50} fish (soft) 1-10 mg/l (hard) 10-10... mg/l	Animal Carcinogen via inhal.; human nasal & lung carcinogen	ID	ID	Dermatitis; inhibits spermatogenesis; lung damage	

ID: Insufficient Data
NAD: No Available Data

Chemical Name	CAS #	CMR Listed	Acute Toxicity: Terrestrial Life LD_{50}	Acute Toxicity: Aquatic Data	Carcinogen	Teratogen	Mutagen	Chronic Effects	Environmental Fate
Toluene	108-88-3	yes	oral rat 2598-7530 mg/kg dermal rabbit 12,200 mg/kg	96 hr LC_{50} fish 6.4-22.8 mg/l	ID	ID	ID	Dermatitis; decreased growth rate; narcotic	BCF: 10.7 (est)
Xylene	1330-20-7	yes	oral rat 1600-8600 mg/kg inhal rat LC_{50} 29500-28000 mg/m^3	96 hr LC_{50} fish 21-37 mg/l	NAD	Potential	ID	Tissue irritant/ dermatitis; menstrual disorders; liver & lung effects	
Naphthalene	91-20-3	no	oral rat 1100-2400 mg/kg dermal rat >2500 mg/kg	96 hr LC_{50} Salmon 1.37-1.84 mg/l 48 hr EC_{50} Daphnia 8.6 mg/l	ID	ID	ID	Cataract formation; alterations in blood cells; anemia; jaundice	BCF: 10.5 (est)
-Dichloro-	78-87-5	no	oral rat 1900-2200 mg/kg mouse 860 mg/kg dog 5000 mg/kg dermal rabbit 10,200 mg/kg	96 hr LC_{50} fish 139-320 mg/l 48 hr EC_{50} Daphnia 52.5 mg/l	ID	ID	ID	CNS disfunction; lung, liver, kidney damage	Half-life in water 7 days
Pyrene	129-00-0	no	oral mouse 9400 mg/kg	NAD	ID	ID	ID	ID	S.S. BCF: 2600
Anthracene	120-12-7	no	ID	ID	ID	NAD	ID	NAD	Moves thru environ. by sorption; is degraded by microbes
Phenanthrene	85-01-8	no	oral mouse 700 mg/kg	96 hr LC_{50} fish <1-2 mg/l	ID	NAD	ID	ID	

ID: Insufficient Data
NAD: No Available Data

Chemical Name	CAS #	CMR Listed	Acute Toxicity: Terrestrial Life LD_{50}	Acute Toxicity: Aquatic Data	Carcinogen	Teratogen	Mutagen	Chronic Effects	Environmental Fate
Di-n-butyl phthalate	84-74-2	yes	oral rat 23 g/kg dermal rabbit 20 ml/kg	96 hr LC_{50} fish 0.7-6.5 mg/l	ID	ID	ID	Testicular atrophy; liver & kidney lesions	Biodegrades in soil and water
Lead	7439-92-1	yes	NAD	96 LC_{50} fish (soft) 1-7.3 mg/l (hard) 471-482 mg/l	ID	ID	NAD	CNS changes; fetotoxic; affects blood forming organs	BCF: 49
Zinc	7440-66-6	yes	oral rat 350 mg/kg	96 hr LC_{50} fish 0.87-12.5 mg/l	ID	ID	ID	High chronic doses can cause bone demineralization, kidney damage	BCF: 47
Mercury	7439-97-6	yes	oral rat (Acetate) 76 mg/kg mouse 62 mg/kg mouse (chloride) 10 mg/kg	96 hr LC_{50} fish 0.024-0.280 mg/l	ID	Potential	ID	Neuronal damage; severe irreversible CNS effects	Bacterial action converts inorganic to more toxic organic form
Magnesium	7439-95-4	no	NAD	NAD	ID	ID	ID		
Copper	7440-50-8	yes	oral (chloride) rat 120 mg/kg (oxide) rat 470 mg/kg (sulfate) rat 300 mg/kg	(ion) 96 hr LC_{50} fish 0.43 mg/l (Acetate) 26 ppm	ID	ID	ID	Anorexia; jaundice; dermatitis	
Calcium	7440-70-2	no	NAD	NAD	NAD	NAD	NAD	Kidney stones	

ID: Insufficient Data
NAD: No Available Data

Chemical Name	CAS #	CHR Listed	Acute Toxicity: Terrestrial Life LD_{50}	Acute Toxicity: Aquatic Data	Carcinogen	Teratogen	Mutagen	Chronic Effects	Environmental Fate
Potassium	7440-09-7	no	NAD	96 hr LC_{50} fish 80 ppm	NAD	NAD	NAD	Excessive tissue levels cause physiological disfunction	
Sodium	7440-23-5	no	NAD	NAD	NAD	NAD	NAD	Hypertension	
Iron	7439-89-6	no	Anhydrous ferric chloride oral 400-900 mg/kg	NAD	ID	NAD	NAD	Accumulation of pigments in lungs after inhal. exposures	
Fluchloralin	33245-39-5	yes	oral mouse 750 mg/kg rat 1550 mg/kg	96 hr LC_{50} fish 12-16 ug/l 48 hr EC_{50} Daphnia 129.2 ug/l	NAD	ID	NAD	NAD	Half-life in heavy soil 65 days
bis(2-chloro isopropyl) ether	108-60-1	no	oral rat 240 mg/kg	NAD	ID	NAD	ID	Liver and kidney damage	BCF: 56.2
Fluorene	86-73-7	no	NAD	NAD	NAD	NAD	NAD	NAD	
Cis-trans-1,2-dichloroethylene	156-59-2 156-60-5	no	ID	trans- 96 hr LC_{50} fish 135 mg/l 48 hr EC_{50} Daphnia 218 mg/l	ID	ID	ID	ID	
2,4-Dimethylphenol	105-67-9	no	oral mouse 809 mg/kg oral rat 3200 mg/kg dermal mouse 1040 mg/kg	48 hr EC_{50} D. magna 2.12 mg/l 96 hr LC_{50} fish 7.8-16.8 mg/l	ID	NAD	NAD	Early life stage test w/fathead minnows = 2.2 ug/l (lethal)	BCF: 150 in bluegill; T 1/2 in bluegill = 1 day

ID: Insufficient Data
NAD: No Available Data

Chemical Name	CAS #	CMR Listed	Acute Toxicity: Terrestrial Life LD_{50}	Acute Toxicity: Aquatic Data	Carcinogen	Teratogen	Mutagen	Chronic Effects	Environmental Fate
Phenol	108-95-2	no	oral rat 340-530 mg/kg dermal rat 670-2500 mg/kg human lethal doses 140-430 mg/kg other animals oral 100-600 mg/kg	LC_{50} D. magna 91-100 mg/l 96 hr LC_{50} rainbow trout 5-11.6 mg/l fathead minnow LC_{50} 24-67.5 mg/l bluegill LC_{50} 1.5-28 mg/l	ID ID	NAD NAD	ID ID	Early life stage test in fathead minnows = 2.6 mg/l (lethal)	Not persistent; readily biodegraded
Ethylbenzene	100-41-4	no	oral rat 3500, 4728 mg/kg skin rabbit 15,415 mg/kg inhal. rat 4000 ppm (4 hrs)	48 hr EC_{50} D. magna = 75 mg/l 96 hr LC_{50} goldfish = 94.4 mg/l 96 hr LC_{50} fathead minnow = 45.3 mg/l 96 hr LC_{50} bluegill	NAD	NAD	NAD	Kidney & liver effects; skin irritation; dermatitis	Calculated BCF: 37.5 (AWQC)
Fluoranthene	206-44-0	no	oral rat 2000 mg/kg dermal rat 3180 mg/kg (24 hr contact)	48 hr EC_{50} D. magna = 325 mg/l 96 hr LC_{50} bluegill = 3.98 mg/l	Cocarcinogen	NAD	ID		Calculated BCF: 1,150 (AWQC)
3,4-Benzofluoranthene	205-99-2	no	NAD	NAD	Potential Animal Carcinogen	NAD	NAD	Tumors	Estimated steady state BCF: 28,200
Chrysene	218-01-9	no	NAD	NAD	ID	NAD	ID	Tumors	BCF: 11,700
1,1-Dichloroethylene	75-35-4	no	oral rat 1500-2500 mg/kg inhal. rat LC_{50} 4 hrs 500-15000 ppm oral mice 200 mg/kg	48 hr EC_{50} D. magna 11:6 and 79.0 mg/l	Suspect Carcinogen	ID	ID	Liver & kidney damage	NAD

ID: Insufficient Data
NAD: No Available Data

Chemical Name	CAS #	CMR Listed	Acute Toxicity: Terrestrial Life LD_{50}	Acute Toxicity: Aquatic Data	Carcinogen	Teratogen	Mutagen	Chronic Effects	Environmental Fate
Acenaphthene	83-32-9	no	oral LD_{50} rat 10 g/kg oral LD_{50} mouse 2.1 g/kg	48 hr EC 50, D. magna = 41.2 mg/l 96 hr LC_{50} bluegill = 1.7 mg/l	NAD	NAD	NAD	Liver, kidney, lung, blood & glandular effects	Measured steady state BCF: 387
Benzo(k) Fluoranthene	207-08-9	no	NAD	NAD	Potential animal carcinogen	NAD	NAD	Tumors	Estimated steady state BCF: 28,200
2-Nitrophenol	88-75-5	no	oral rat 2830 mg/kg oral mouse 1300 mg/kg	NAD	NAD	NAD		Colitis, enteritis, gastritis, neuritis, spleen hyperplasm	NAD
4-Nitrophenol	100-02-07	no	oral rat 350 mg/kg oral mouse 470 mg/kg	LC_{50} D. magna 8,396 ug/l & 21,900 ug/l LC_{50} bluegill 8.280 ug/l LC_{50} fathead minnows 60,500 ug/l	ID	NAD	ID	Same as above	NAD
Antimony	7440-36-0	no	antimony tr. fluoride oral mouse 804 mg/kg	D. magna ant. potassium tatrate EC_{50} 9000 ug/l Fathead minnow, antimony trichloride LC_{50} 21,900 ug/l	ID	ID	ID		

ID: Insufficient Data
NAD: No Available Data

Chemical Name	CAS #	CMR Listed	Acute Toxicity: Terrestrial Life LC_{50}	Acute Toxicity: Aquatic Data	Carcinogen	Teratogen	Mutagen	Chronic Effects	Environmental Fate
Thallium	7440-28-0	no	minimum lethal does for humans 10-15 mg/kg Thallium Acetate rat oral 18-29 mg Tl/kg dog oral 10-20 mg Tl/kg rabbit oral 12-19 mg Tl/kg Thallic Oxide rat oral 9-20 mg Tl/kg dog oral 20-30 mg Tl/kg rabbit oral 10-30 mg Tl/kg	D. magna 48 hr EC_{50} = 2180 & 910 ug/l fathead minnow 96 hr LC_{50} = 1800 ug/l bluegill 96 hr LC_{50} = 132,000 & 121,000 ug/l	ID	ID	ID	Terrestrial life; hair loss & effects on nervous system	
Tin	7440-31-5	no	oral rat diethyl tin diiodide = 100 mg/kg dibutylin oxide = 45 mg/kg trimethyltin sulfate = 30 mg/kg triphenyltin chloride = 190 mg/kg	NAD	ID	ID	ID	ID	ID
Silver	7440-22-4	no	humans - ingestion of 10g silver nitrate is usually fatal; toxicity of silver compds is moderate	fathead minnow 3.9 ug/l rainbow trout 28 ug/l D. magna 0.25 ug/l	ID	ID	ID	In humans, argyria	Biocons. of Ag in bluegills exposed to Ag nitrate for 28 days
Cyanide	7440-22-4	no	humans 1-3 mg/kg	freshwater fish 20-200 ug/l	NAD	NAD	NAD	No effects	NAD

ID: Insufficient Data
NAD: No Available Data

Chemical Name	CAS #	CMR Listed	Acute Toxicity: Terrestrial Life LD_{50}	Acute Toxicity: Aquatic Data	Carcinogen	Teratogen	Mutagen	Chronic Effects	Environmental Fate
Vanadium	7440-62-2	no	oral mouse 130 mg/kg for vanadium trioxide oral mouse 23 mg/kg for vanadium pentoxide & vanadium trichloride	NAD	NAD	NAD	NAD	Due to inhal.- acute inflammation of lung tissue & action on a variety of enzyme systems	NAD
Boron	7440-42-8	no	oral mouse 2000 mg/kg	NAD	NAD	NAD	NAD	NAD	NAD
Manganese	7439-96-5	no	low order of acute toxicity	NAD	NAD	NAD	NAD	Progressive deterioration of the CNS	NAD
Cobalt	7440-48-4	no	oral rat cobaltous oxide 1700 mgCo/kg oral mouse cobaltous oxide 800 mg/kg	NAD	NAD	NAD	NAD	Goiter, decreased thyroid function; increased heart rate; dermatitis; lung inflammation	NAD
Barium	7440-39-3	no	BaCl, oral, humans = 550-600 mg of barium (0.8-0.9g of BaCl)	NAD	NAD	NAD	NAD	Myeloid hyperplasm of spleen, liver & bone marrow; blood changes; stimulation of smooth muscle; paralysis of CNS	NAD
Aluminum	7429-90-5	no	relatively non-toxic	NAD	NAD	NAD	NAD	Retarded growth & metabolic disturbances in animals	NAD

APPENDIX D

1985 CONSENT DECREE

11/07/85

11/12/85R

UNITED STATES OF AMERICA
IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

FRANK J. KELLEY, Attorney General for the State of Michigan, ex rel MICHIGAN NATURAL RESOURCES COMMISSION, MICHIGAN WATER RESOURCES COMMISSION, and DR. RONALD SKOOG, Ph.D., Director of the Michigan Department of Natural Resources

Plaintiffs,

vs.

Civil Action
No. 83-CV-4712-DT

BASF WYANDOTTE CORPORATION,

Judge Avern Cohn
P-12030

Defendant.

CONSENT DECREE

The parties, Frank J. Kelley, Attorney General for the State of Michigan, Frank J. Kelley, ex rel. Michigan Natural Resources Commission, Michigan Water Resources Commission, and the Director of the Michigan Department of Natural Resources (hereinafter jointly referred to as "MDNR"), and BASF Wyandotte Corporation (hereinafter "BWC"), by their respective attorneys, having consented to the entry of this Consent Decree,

NOW, THEREFORE, before the taking of any testimony, upon the pleadings, and without admission or adjudication of any issue of

fact or law herein, it is hereby ORDERED, ADJUDGED, AND DECREED as follows:

I. JURISDICTION

This Court has jurisdiction over the parties and subject matter of this action under 28 U.S.C. §1331, 42 U.S.C. §9613 and 42 U.S.C. §6972. This Court further has pendent jurisdiction of the parties and subject matter of this action with regard to claims under State of Michigan 1929 PA 245, as amended, MCL 323.1 et. seq., the Water Resources Commission Act, and 1970 PA 127, MCL 691.1201 et. seq., the Anderson-Rockwell Environmental Protection Act.

II. PARTIES BOUND

This Consent Decree shall apply to and be binding upon the parties to this Consent Decree, their officers, employees, agents, successors and assigns, and upon all persons, firms, subsidiaries and corporations acting under, through or for, or in active concert or participation with the parties in the performance of any obligations hereunder.

III. THE SITES

The property which is the subject of this Consent Decree (hereinafter "the Sites") is commonly referred to as the "North Works" and the "South Works" of BASF WYANDOTTE CORPORATION, and is located in the City of Wyandotte, Michigan. A description of the Sites appears in Appendix A.

IV. PURPOSE OF THIS CONSENT DECREE

It is the mutual intent and purpose of the parties that BWC shall, at its own and sole expense, control conditions at the Sites which could endanger public health, welfare, or the environment and take measures to prevent the flow of contaminated groundwater from the Sites to the Detroit River by undertaking the specific activities set forth in Section V of this Consent Decree.

V. REMEDIAL PROGRAMS

BWC shall accomplish programs of remedial action at the Sites, consisting of a site modification program, a monitoring program, and a maintenance program. The remedial action programs for the North and South Works are set forth in Appendix B and Appendix C attached hereto.

VI. DISCONTINUANCE OF OPERATION OF REMEDIAL ACTION PROGRAM

A. BWC shall give notice to MDNR of its intent to discontinue operation of any remedial program herein. Notice of BWC's intent to shut down any groundwater monitoring, collecting or treating system described by this document shall precede the shut down by at least sixty (60) days. MDNR shall respond affirmatively or negatively to such notice within sixty (60) days.

No remedial system within a particular area of the South Works may be discontinued prior to the expiration of thirty (30) years from the date of entry of this Decree unless BWC has given the notice described in this paragraph and can demonstrate that the required concentration levels of contaminants have been achieved in each well or drain comprising the system in that particular area and in each monitor well in the area served by the system for the required sampling period specified for that particular area; provided however, that if any remedial system on the South Works has not been certified operational pursuant to Paragraph IX.D. within eighteen (18) months of entry of this Consent Decree, the thirty (30) year period shall begin to run from the date that such system has been certified operational. If BWC wishes to discontinue collecting the groundwater at any individual extraction system within a particular remedial system on the South Works, the procedure set forth in Paragraph F.3. in Appendix C will control.

No extraction well system within a particular area of the North Works, nor the treatment system serving any such extraction well system, may be discontinued prior to thirty (30) years from the date that such systems become operational unless BWC has given such notice and can demonstrate that the required concentration levels of influent and effluent of the treatment system and in each monitor well in the area served by the extraction well system have been achieved for the required sampling period specified for that particular area. If BWC wishes to discontinue any individual wells within an extraction well system or treatment system on the North Works, the procedure set forth in Paragraph D of Appendix B will control.

A dispute by the parties regarding the adequacy of any demonstration under VI.A. shall be resolved by the Court. In the resolution of any such dispute, BWC shall bear the burden of persuasion by a preponderance of the evidence.

B. Before the operation of any remedial system is discontinued, MDNR may request that such system be modified, relocated or continued. BWC shall respond to such a request within sixty (60) days. Any disagreement by the parties regarding modification, relocation or continued operation of any system shall be resolved by the Court. Except as provided in VI.A., MDNR shall bear the burden of persuasion by a preponderance of the evidence that such

modification, relocation and/or continued operation is necessary to protect the public health, welfare or the environment.

C. Where MDNR is requesting modification, relocation and/or operation of a remedial system beyond thirty (30) years from the date of entry of this Consent Decree, MDNR shall bear the burden of persuasion by a preponderance of the evidence that such modification, relocation and/or continued operation is necessary to protect the public health, welfare or the environment.

D. In the event of any dispute under this paragraph, no system shall be discontinued until ordered by the Court.

VII. APPROVALS; NOTICE OF DISAPPROVAL OR INADEQUACY

A. Approvals

Except as otherwise specifically provided in this Consent Decree or the Appendices, the approval of any proposed action, or of any certification, report, information or data submitted by BWC to MDNR pursuant to this Consent Decree, shall be effective either upon written notice to BWC or upon the expiration of a period of sixty (60) days from the receipt of notice of the proposed action or of such certification, report, information or data by MDNR, whichever shall occur earlier. This 60-day period may be extended upon agreement between BWC and MDNR.

B. Notice of Disapproval or Inadequacy

Except for those actions referred to in Section XII of the Consent Decree, in the event MDNR should disapprove or find inadequate any proposed action, or any certification, report, information, or data submitted by BWC under this Consent Decree, it shall provide written notice thereof to BWC within 60 days of receipt of a notice of a proposed action or of such certification, report, information or data, which notice shall include:

1. A detailed statement of the bases for MDNR's conclusion or request;

2. A description of what further action in its opinion is required to fulfill or effectuate any provisions of this Consent Decree, such description to include, without limitation, the need for verification of data or for obtaining additional data or for implementing specified actions; and

3. A proposed schedule for submission of any additional information.

It is the intent of the parties that this notice fully set forth and describe any disapproval or finding of inadequacy and the bases therefore; however, an insufficiency in the notice

shall not be deemed a waiver by MDNR of any such disapproval or finding of inadequacy.

C. Submission to Court

In the event an agreement cannot be reached between BWC and MDNR concerning MDNR's disapproval or finding of inadequacy, BWC shall file a petition with the Court setting forth the matter in dispute. In any proceedings on such petition, BWC shall have the burden of persuasion by a preponderance of the evidence unless the burden of persuasion is assumed by MDNR under any other provision of this Consent Decree.

D. Resolution of Disputes During Course of Site Modification Program

In the event a dispute should arise between BWC and MDNR during construction of the Site Modification Program, BWC shall, upon demand by MDNR, stop construction and shall, unless the dispute is resolved, file a petition with the Court setting forth the matter in dispute.

VIII. DELAY IN PERFORMANCE

If any event occurs which delays or could delay the timely achievement of the requirements of this Consent Decree (including any delays resulting from the obtaining of any necessary permits), BWC shall notify MDNR within three days in writing of

the delay or anticipated delay as appropriate, describing in detail the anticipated length of the delay, the cause or causes of delay, the measures taken and to be taken by BWC to prevent or minimize the delay, the schedule by which these measures will be implemented, and requesting approval of a revised schedule. If the delay or anticipated delay has been or will be caused by circumstances beyond the reasonable control of BWC, the time for performance hereunder shall be extended for a reasonable period of time as is appropriate under the circumstances, provided that an extension of the time for performance of one event shall not necessarily entail an extension of the time for performance of subsequent events. Increased costs of performance of the requirements of this Consent Decree shall not be circumstances beyond the reasonable control of BWC justifying an extension in the time for performance. In the event MDNR disapproves BWC's request for a delay in performance, BWC may promptly submit the matter to this Court for resolution in accordance with Section VII.C.

IX. COORDINATION AND NOTIFICATION

A. Designation of Coordinator

The parties shall designate a coordinator and an alternate within 15 days following entry of this Consent Decree. At any

time, the parties may appoint new coordinators, alternates or both and shall so advise the other parties in writing. To the maximum extent possible, communications between the parties shall be made between coordinators. Whenever, pursuant to this Consent Decree, a report, notice, approval or other document is required to be forwarded by one party to another, it shall be sent by certified or registered mail, return receipt requested, to the attention of the coordinators at the addresses specified below.

To MDNR: Director
Michigan Department of Natural Resources
Box 30028
Lansing, Michigan 48909

To BWC: General Manager
Wyandotte Works
BASF Wyandotte Corporation
1609 Biddle Avenue
Wyandotte, Michigan 48192

B. Designation of Field Representative

MDNR shall designate a field representative and an alternate within fifteen (15) days following entry of this Consent Decree. The field representative shall have authority to act on behalf of MDNR on matters relating to the site work, measurements during construction, and compliance with the specifications of this Consent Decree. The MDNR field representative shall be available for consultation during construction activities, which activities

will be scheduled by BWC and its contractors. In the event of a disagreement among the BWC project manager and the MDNR field representative, the matter shall be referred to the coordinators for resolution. In the event the matter is not resolved by the coordinators, BWC shall file a petition with the Court in accordance with Section VII.C. of this Consent Decree.

C. Notice of Commencement of Construction

BWC shall provide written notice to the MDNR coordinators and to the Attorney General of Michigan at least thirty (30) days prior to the commencement of construction of the Site Modification Program set out in Section V. Subsequent notice of construction activities shall be based upon a written schedule provided by the BWC project manager to the MDNR field representative.

D. Certification of Completion by BWC

On or before December 31, 1986, BWC shall provide to MDNR a final certification that the Site Modification Program described in Section V of this Consent Decree has been completed and placed in operation in accordance with the requirements of this Consent Decree.

X. INFORMATION

All data, information and other documents in the possession of BWC and not privileged, which relate to obligations undertaken by BWC pursuant to this Consent Decree, shall be provided by BWC to MDNR upon request. Documents or information entitled to confidentiality under applicable Michigan law shall be disclosed by MDNR only in accordance with the procedure set out in MCL 299.528.

XI. ACCESS TO SITES

A. Access by MDNR Representative

BWC shall permit the MDNR field representative, and such other agency employees, contractors and consultants as the field representative requires to assist him in his duties under this Consent Decree, to enter the Sites at all reasonable times. The field representative and the persons assisting him shall at all times observe Michigan OSHA, OSHA, NIOSH, and any applicable EPA rules.

B. Taking of Samples

BWC or MDNR may take any samples from the North or South Works to demonstrate or check compliance with this Consent

Decree. Such samples shall be split with the other parties upon request. Any analysis not covered by Section V. shall be conducted in accordance with then-currently applicable laws, regulations or such other analytical procedures as may be agreed upon by BWC and MDNR.

C. No Limitation on Entry

Nothing in this Consent Decree is intended to limit in any way the right of entry or inspection or sampling of MDNR that it may otherwise have by operation of any law.

XII. SALE OR LEASE OF NORTH OR SOUTH WORKS SITES

Should BWC sell or lease any portion or all of the North or South Works during the term of the remedial action program set forth in this Consent Decree, BWC shall retain legal right of access (whether by easement or otherwise) to those portions of the North or South Works where subsurface drains, groundwater extraction wells, pumping systems, discharge systems, monitor wells and piezometers, etc., are located to ensure that its obligations under the Consent Decree can be carried out. Sixty (60) days prior to any intended sale or lease, BWC shall deliver to MDNR and the Attorney General of Michigan copies of any proposed documents retaining such legal right of access, which docu-

ments shall demonstrate that BWC has in fact retained legal right of access (whether by easement or otherwise) to those portions of the North and South Works where subsurface drains, groundwater extraction wells, pumping systems, discharge systems, monitor wells and piezometers, etc., are located to ensure that its obligations under the Consent Decree can be carried out. The State shall have sixty (60) days from receipt of such documents to object in writing thereto. Any objection by the State shall specify in detail how such documents are inadequate to ensure the discharge of BWC's obligations under the Consent Decree. Any dispute by the parties shall be resolved by the Court in accordance with Section VII.C. hereof, except that MDNR shall bear the burden of persuasion by a preponderance of the evidence.

XIII. FINANCIAL RESPONSIBILITY

A. Funding of Capital Expenditures

BWC shall fund all capital expenditures and pay all expenses necessary to accomplish the measures set forth in this Consent Decree except that BWC shall not reimburse MDNR for any of its expenses in connection with this Consent Decree, other than those provided for in Section XV.

B. Certification of Net Worth

1. Upon entry of this Consent Decree with the Court, BWC shall submit to MDNR either a statement certified by its chief financial officer that its net worth is not less than Twenty Million ($20,000,000) Dollars or a copy of its financial statements for the fiscal year last ended, showing a net worth of not less than Twenty Million ($20,000,000) Dollars. If at any time prior to the completion of the construction of the remedial programs described in Appendix B or C BWC's net worth decreases to below Twenty Million ($20,000,000) Dollars, BWC shall immediately notify MDNR and shall promptly provide security in an amount sufficient for the performance of BWC's obligations hereunder through the completion of construction. Such security may take the form of a performance bond, a letter of credit, the guaranty

of a corporation having a net worth of not less than twenty Million ($20,000,000) Dollars, or such other form of security to which the parties may hereafter agree.

2. If, subsequent to the completion of construction, but prior to the termination of BWC's other obligations under this Consent Decree, BWC's net worth decreases to below Ten Million ($10,000,000) Dollars, BWC shall immediately notify MDNR, and shall promptly provide security in an amount sufficient for the performance of BWC's remaining obligations under this Consent Decree. Such security may take the form of a performance bond, a letter of credit, the guaranty of a corporation have a net worth of not less than Ten Million ($10,000,000) Dollars, or such other form of security to which the parties may hereafter agree.

XIV. SETTLEMENT, RELEASES, AND EFFECT OF THIS CONSENT DECREE ON OTHER LAWS AND THIRD PARTIES

A. All Work to be Done in Accordance With Applicable Laws and Regulations

All work undertaken by BWC pursuant to this Consent Decree is to be performed in accordance with all federal, state and local statutes, regulations and ordinances including, but not limited to, the Occupational Safety and Health Act, 29 U.S.C. 651, et seq., Clean Water Act, 33 U.S.C. 1251, et seq., the Water Resources Commission Act, 1929 PA 245, as amended, MCL 323.1, et

seq., and the Anderson-Rockwell Environmental Protection Act, 1970 PA 127, MCL 691.1201, et seq.

B. No Admissions

This Consent Decree represents a compromise of disputed issues and facts and BWC expressly makes no admission of fact or liability concerning any acts or liabilities asserted against it in this action. Nothing contained in this Consent Decree shall be deemed an admission of fact or liability or evidence of same, nor of any violation of law or regulation.

C. Rights of Third Parties Not Affected

This Consent Decree shall neither create nor affect rights of persons or entities who are not parties of this Consent Decree and who are not described in Section II. of this Consent Decree.

D. No Waiver of Claims Against Third Parties

The State of Michigan does not waive any claims or rights it may have against any person or entity not a party to this Consent Decree.

E. Release

The execution by the parties and the entry by the Court of this Consent Decree shall constitute full settlement of the

claims asserted, or which could have been asserted, on behalf of the Plaintiffs and the State of Michigan in this action and shall constitute a full discharge and release of BWC, its subsidiaries, parent companies, predecessors, affiliates, successors and assigns, and its and their officers, directors, agents and employees from any liability of any kind or nature whatsoever under, but not limited to, the Resource Conservation and Recovery Act, 42 U.S.C. §6901 et seq., the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §9601 et seq., the Water Resource Commission Act, 1929 PA 245, MCL §323.1 et seq., the Anderson-Rockwell Environmental Protection Act, 1970 PA 127, MCL §691.1201 et seq., and any other statute, common law, regulation or rule of the United States of America or the State of Michigan, resulting from or in any way relating to

1. The disposal or presence of known chemicals or other known substances at, on or under the Sites prior to the entry of this Consent Decree;

2. The continuing presence of such known chemicals or other known substances at, on or under the Sites subsequent to the entry of this Consent Decree;

3. The migration, discharge or release of such known chemicals or other known substances from the Sites prior to the completion of construction of the Site Modification

Program referred to in Section V. of this Consent Decree; and

4. The migration, discharge or release of such known chemicals or other known substances from the Sites subsequent to completion of construction of the Site Modification Program referred to in Section V. of this Consent Decree, unless such migration, discharge or release results from a violation of this Consent Decree or any discharge permit.

"Known chemicals or other known substances" means chemicals or substances known by MDNR to be present at the Sites as of the date of entry of this Consent Decree.

The State of Michigan specifically retains the right and authority to enforce the terms of this Consent Decree.

XV. COSTS

Within fifteen (15) days after entry of this Consent Decree, BWC shall pay the State of Michigan, c/o Chief, Environmental Protection Division, Department of the Attorney General, the sum of Two Hundred Ninety Thousand ($290,000.00) Dollars for its past and future costs. Each other party to this Consent Decree shall bear its own costs in this action and in the implementation of this Consent Decree.

XVI. SEVERABILITY

It is the intent of the parties hereto that the provisions of this Consent Decree shall be severable, and should any provision be declared by a court of competent jurisdiction to be inconsistent with State or Federal law, and therefore unenforceable, the remaining clauses shall remain in full force and effect.

XVII. RETENTION OF JURISDICTION

This Court specifically retains jurisdiction over the subject matter and the parties for the purpose of enforcing or construing or modifying the provisions of this Consent Decree.

AVERN COHN
United States District Judge

DATED AND ENTERED:

The parties agree and consent hereto.

FRANK J. KELLEY
Attorney General

_____
STEWART H. FREEMAN
Assistant Attorney General in Charge
Environmental Protection Division

_____
STEPHEN F. SCHUESLER
Assistant Attorney General
Environmental Protection Division
Department of Attorney General
720 Law Building
Lansing, Michigan 48913

BASF WYANDOTTE CORPORATION
a Michigan corporation, Defendant

By: _____

Its _____

and by

FISCHER, FRANKLIN, FORD, SIMON
& HOGG

By: _____
William C. Potter, Jr.

and _____
Thomas M. Woods

Attorneys for Defendant
BASF Wyandotte Corporation

1700 Guardian Building
Detroit, Michigan 48226

APPENDIX A

PROPERTY DESCRIPTION NORTh and SOUTH WORKS

NORTH WORKS

The land located in the City of Wyandotte, Wayne County, State of Michigan described as being part of fractional Sections 21 and 28, T. 3 S., R. 11 E. and generally described as being bounded on the north by Perry Place, on the east by the U.S. Harbor Line of the Detroit River, on the south by Mulberry Street and of the west by Biddle Avenue. Exhibit I, Appendix B is a generalized map of the North Works.

SOUTH WORKS

The land located in the City of Wyandotte, Wayne County, State of Michigan, described as being part of fractional Section 32, T. 3 S., R. 11 E. and generally described as being bounded on the north by Pine Street, on the east by the U.S. Harbor Line of the Detroit River, on the south by Wye Street and on the west by Biddle Avenue. Exhibit I, Appendix C is a generalized map of the South Works.

11/07/85

APPENDIX B

N O R T H W O R K S

REMEDIAL PROGRAM

INTRODUCTION

BWC will undertake a remedial program that addresses the movement of groundwater towards the Detroit River and the City of Wyandotte sewer system from Locations A, B and C as shown on Exhibits I through V of this appendix.

A. EXTRACTION SYSTEMS

A groundwater extraction system shall be installed in Locations A, B, and C. The approximate position of each extraction system is shown on Exhibit I. Exhibits II, III and IV provide information on the number and placement of extraction wells and piezometers for Locations A, B and C respectively. The number of wells and the rate of withdrawal from the wells for each location shall be at all times sufficient to halt the flow of contaminated groundwater to the Detroit River and the City of Wyandotte sewer system by maintaining a hydraulic gradient toward the extraction wells.

BWC shall maintain the extraction wells including cleaning, replacement of screens and replacement of any extraction well that will not produce water due to failure of well components. A piezometer system shall be installed and the water level will be measured on the schedule established in paragraph D of this appendix, to demonstrate the creation and maintenance of an inward hydraulic gradient at Locations A, B and C.

B. TREATMENT SYSTEMS

A groundwater treatment system(s) shall be installed to treat the water removed by each extraction well system pursuant to the Implementation Schedule. BWC shall maintain the treatment system(s) until the conditions for cessation of operation are met.

C. IMPLEMENTATION SCHEDULE

BWC shall complete installation of the remedial program described in this appendix on or before December 31, 1986.

BWC shall develop the basis of design of an activated carbon system, or its equivalent, construct such system and commence its operation on or before December 31, 1986. The basis of design and the final process flow diagram and operations manual shall be submitted to MDNR for review and approval which shall be completed within thirty (30) days of submittal.

D. MONITORING

Piezometers/monitor wells shall be installed in Locations A, B and C approximately as shown on Exhibits II through IV. The specific locations of the piezometers and monitor wells shall be described on as built plans.

The water level in each piezometer, and each extraction well shall be measured monthly for the first year following installation of the piezometers and quarterly thereafter. BWC shall demonstrate that an inward hydraulic gradient toward each extraction well system exists that is adequate to halt the flow of contaminated groundwater from the North Works to the Detroit River. Thereafter, the water level elevation in each piezometer shall be measured quarterly.

MONITORING (Continued)

BWC shall operate all extraction and treatment systems for a period of not less than 15 years. Following that period, BWC may give notice of intent to discontinue operation of any extraction well, extraction system or treatment system if six (6) consecutive samples collected in June and October in each of three (3) consecutive years from such well(s), extraction system, treatment system and associated monitoring well(s) demonstrate that the required concentration levels of contaminants have been achieved, or BWC can demonstrate that the concentration of the chemicals identified in the basis of design are no longer effectively being removed by the treatment system. "The required concentration levels of contaminants" means that the concentrations of contaminants identified in the basis of design of the treatment system(s) are less than the level of detectibility described in this paragraph D. If such demonstration is made, such extraction well, extraction system or treatment system may be plugged and abandoned in accordance with the procedures set forth in Paragraph VI of the Consent Decree. In any event, as of the beginning of the twenty-sixth (26th) year of the operation of the system, BWC shall commence such collection and analysis of samples from each extraction well and monitor well then in operation, which collection and analysis shall continue until the end of the thirty (30) year period provided by the Consent Decree. The samples shall be analyzed for the chemicals listed in the basis of design of the treatment system(s). 1,2-Dichloropropane 1,2-Dichloroethane methylene Chloride Chloroform

All analysis required under this Consent Decree shall use EPA Method 624 or 625 as published in the Federal Register on October 26, 1984. Concentrations shall be reported in detectable amounts based on ten (10) times signal-to-noise ratio. When using EPA Method 625, a 1000 ml water sample shall be concentrated to 2 ml of extract.

E. OPERATION OF THE SYSTEMS

Groundwater extracted and treated by the systems described in the Consent Decree, shall be discharged to the Wayne County Department of Public Works' Wastewater Treatment Plant in accordance with a permit to discharge issued by Wayne County to BWC or to the surface waters under an NPDES permit issued by the State to BWC.

F. OTHER CONDITIONS

Within thirty (30) days of the receipt of any influent or effluent data required under this remedial program, BWC shall provide the Department of Natural Resources with the numerical results.

BWC will provide thirty (30) days prior written notice to the Wayne County Public Works of its intent to discontinue the sampling of any groundwater source discharging to the Wayne County Public Works' Wastewater Treatment Plant.

BWC shall make application to discharge the groundwater collected from these remedial systems to the Wayne County Public Works' Wastewater Treatment Plant. In the event the characteristics of the groundwater require Wayne County to impose pretreatment as a condition precedent to discharge, BWC may elect to comply with the County's pretreatment requirements or, alternatively, BWC may make application for direct discharge to the Detroit River. In the event Wayne County is required to reject the groundwater discharge from any of the above systems, BWC shall make application for the direct discharge of such groundwater

OTHER CONDITIONS (Continued)

to the Detroit River. Should BWC make application for a permit to discharge groundwater to the Detroit River, the Michigan Department of Natural Resources shall review the application in accordance with then applicable regulations and shall not unreasonably deny the permit. Provided BWC (a) gives notice to MDNR within five (5) working days of receipt of notice by the County of its intent to reject BWC's discharge, (b) applies for a permit for direct discharge to the Detroit River within sixty (60) days following receipt of such notice by the County, and (c) takes all reasonable steps necessary to maintain a permitted discharge to the POTW during the period following the County's adoption of the pretreatment requirements, the groundwater collection systems shall not be operated unless a permit to discharge to Wayne County or, alternatively, to the Detroit River, has been issued and remains in effect. If BWC challenges the necessity for or the validity of any permit condition, BWC shall construct, maintain and operate treatment technology which has been agreed upon by the parties or which has been determined to be appropriate by this Court under Paragraph VII.C. of the Consent Decree until such challenge(s) has been resolved.

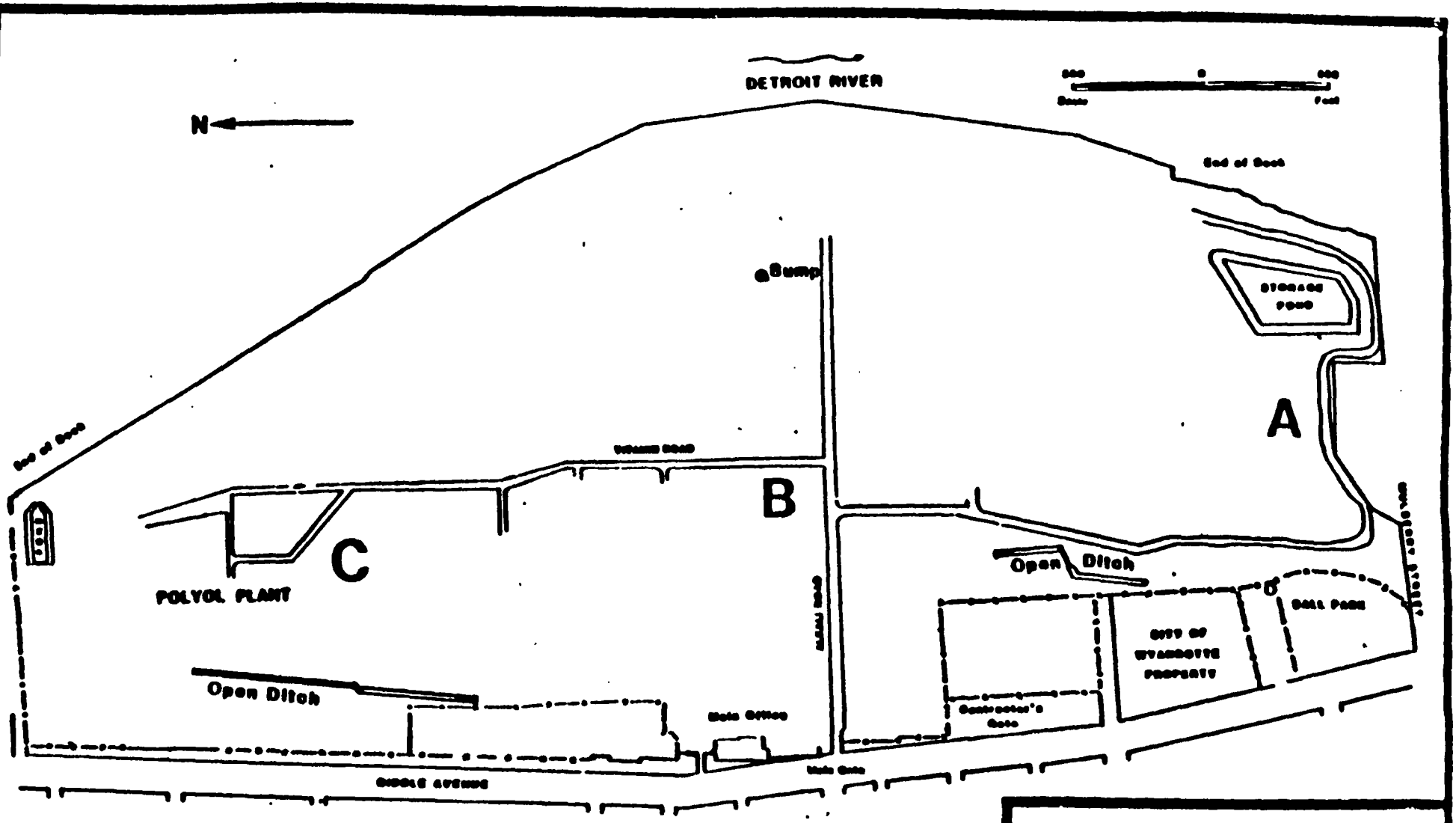
Upon application by BWC at any time after a fifteen (15) year period, the Department of Natural Resources shall determine whether the operation of any of the above systems or parts thereof is no longer necessary to comply with conditions established by then existing law or regulations. If the operation of such system(s) is not required, it may be discontinued. BWC shall bear the bur-

OTHER CONDITIONS (Continued)

den of persuasion by a preponderance of the evidence that continued operation of the system(s) is no longer necessary.

All former observation wells will be plugged.

Soils and sludges excavated during construction of any groundwater collection system shall be managed in accordance with the law.

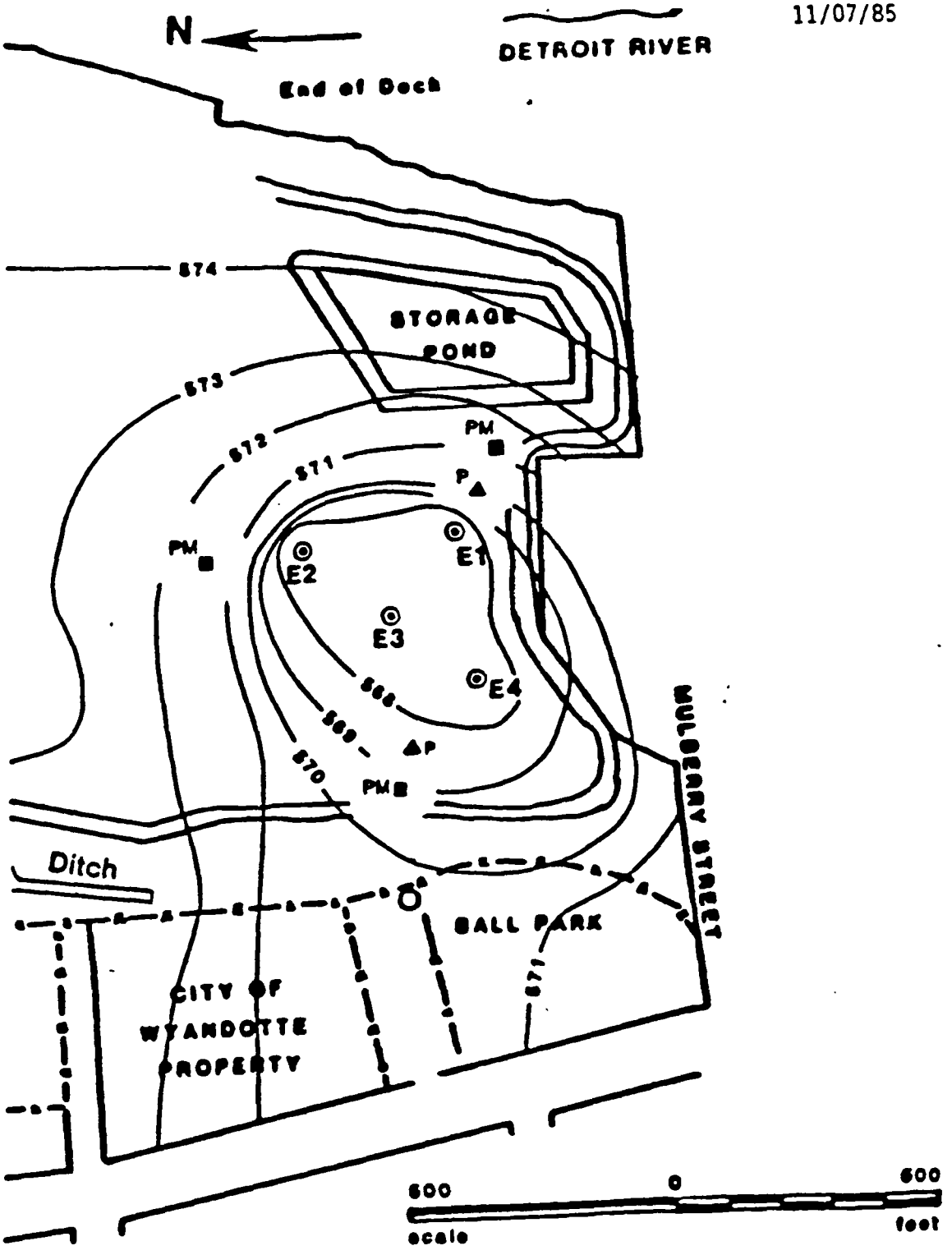


BASF Wyandotte Corporation
NORTH WORKS

EXHIBIT I
LOCATIONS

11/07/85

11/07/85



LEGEND

⊙ - EXTRACTION WELL

▲ P - PIEZOMETER

■ PM - PIEZOMETER/MONITOR WELL

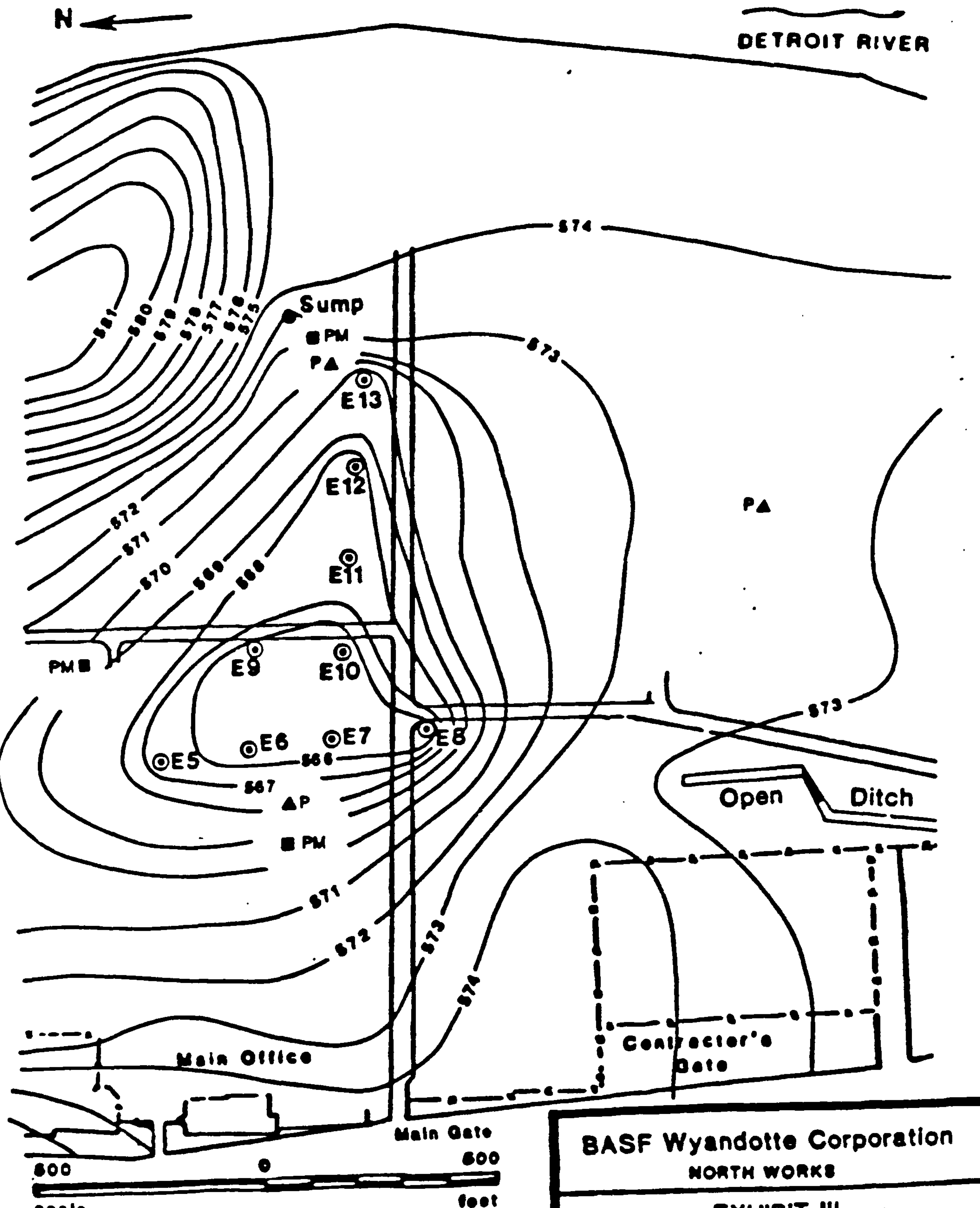
-570- - CONTOUR ON PREDICTED WATER TABLE IN FEET (USO & GSD)

BASF Wyandotte Corporation
NORTH WORKS

EXHIBIT II

REMEDIAL PLAN FOR LOCATION A AND PREDICTED AVERAGE WATER TABLE

11/07/85

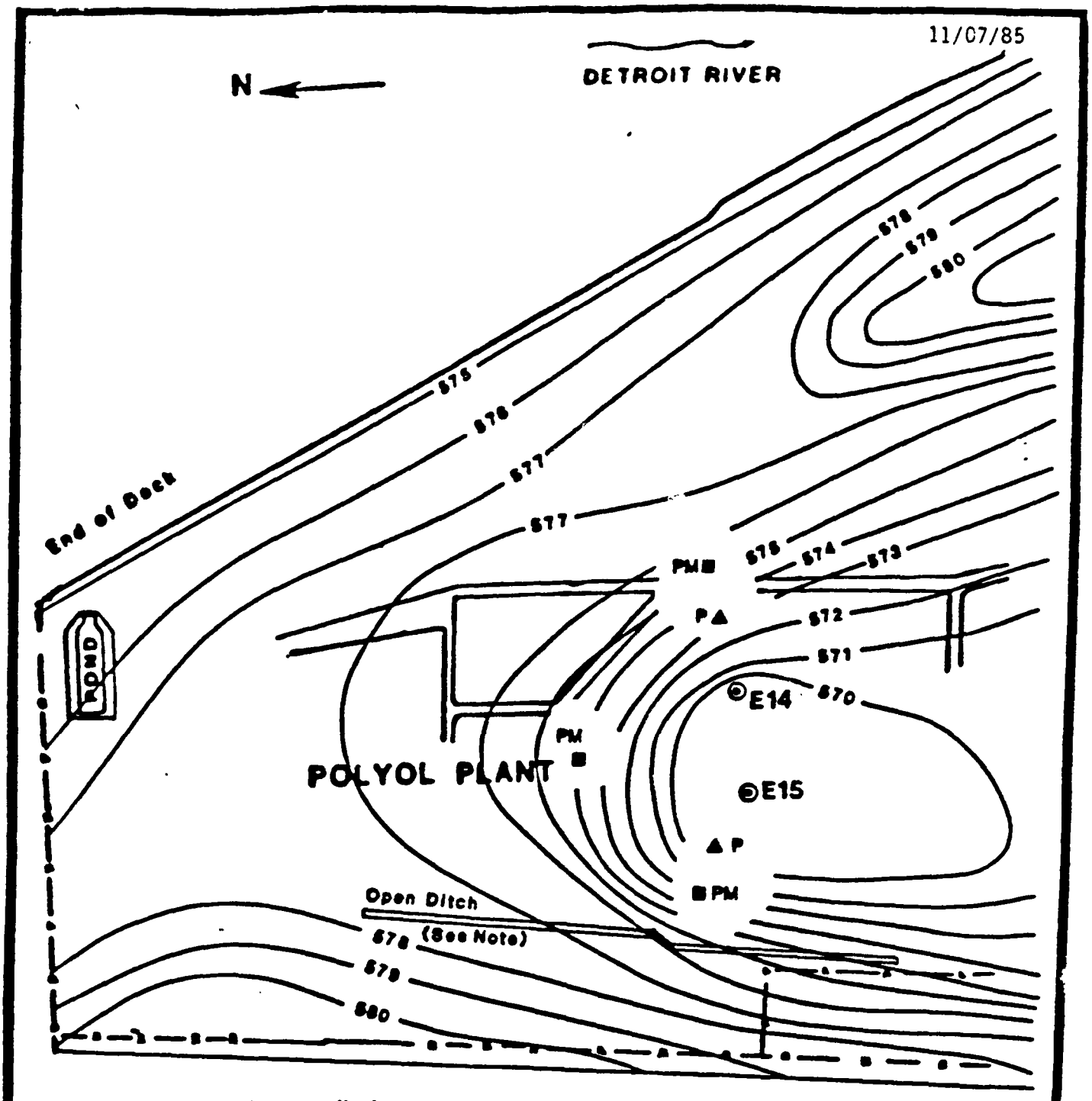


LEGEND

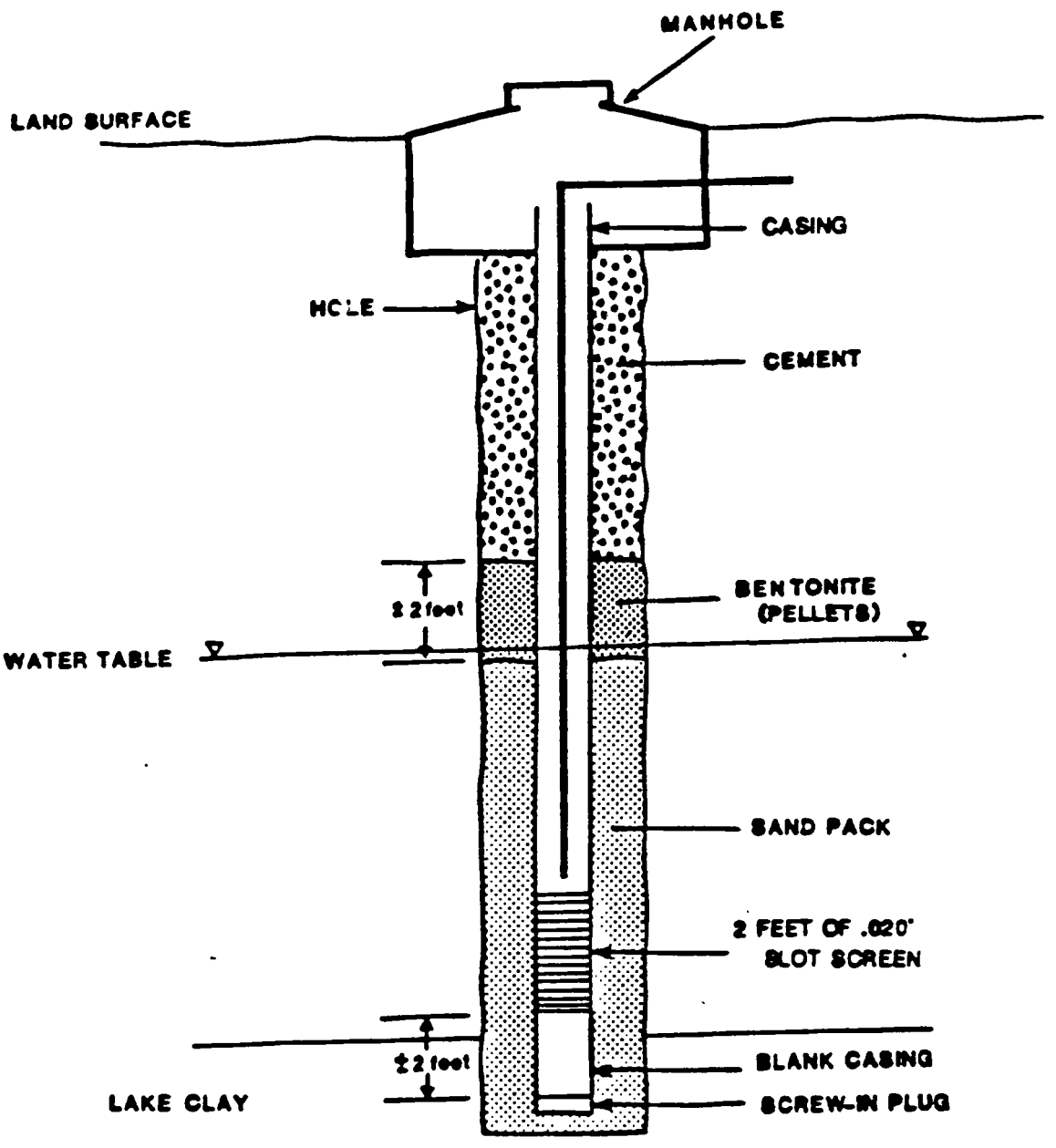
⊙ - EXTRACTION WELL
▲ P - PIEZOMETER
■ PM - PIEZOMETER/MONITOR WELL
—570— - CONTOUR ON PREDICTED WATER TABLE IN FEET (USC & GS)

BASF Wyandotte Corporation
NORTH WORKS

EXHIBIT III
REMEDIAL PLAN FOR LOCATION B AND PREDICTED AVERAGE WATER TABLE


11/07/85
N
DETROIT RIVER
End of Dock
POND
575
576
577
577
578
579
580
PM
575
574
573
P
572
571
E14
570
PM
POLYOL PLANT
E15
P
PM
Open Ditch
578 (See Note)
579
580
NOTE: Most ground-water discharge into ditch eliminated during system operation.
500
0
500
scale
feet
LEGEND
- EXTRACTION WELL
P - PIEZOMETER
PM - PIEZOMETER/MONITOR WELL
570 - CONTOUR ON PREDICTED WATER TABLE IN FEET (UBO & GBD)
BASF Wyandotte Corporation
NORTH WORKS
EXHIBIT IV
REMEDIAL PLAN FOR
LOCATION C
AND PREDICTED
AVERAGE WATER TABLE

11/07/85



BASF Wyandotte Corporation
NORTH WORKS

EXHIBIT V
CONSTRUCTION DETAILS
OF EXTRACTION WELLS

APPENDIX C

SOUTH WORKS

REMEDIAL PROGRAM

INTRODUCTION

BWC will undertake a remedial program for the South Works that addresses: the movement of groundwater towards the Detroit River in Area A and Area B; the presence of materials of concern in a deposit of gray solids in Area C; the tendency of water to pond in the surface in Area C; and the movement of groundwater toward Biddle Avenue in Area D.

A. REMEDIAL PROGRAM FOR AREA A

Area A is located in the southeast corner of the South Works adjacent to the Detroit River (Exhibit I).

The groundwater in this area of the site flows in the general direction of the Southeastern boundary of the site (Exhibit II). A subsurface drain system will be installed along a 400 foot north-south line located 200 feet west of the shoreline which shall halt the flow of groundwater moving from Area A toward the Detroit River and Wye Street. The location and design details of the system to be installed are set forth in the Exhibits III, IV, and V. The drain will be installed at a depth of about 15 feet near the top of the lake clay underlying the surficial materials in this area. A water level measuring device with an accuracy of $\pm$ 0.1 feet shall be installed in the sump.

Groundwater collected through the operation of this system will be discharged to the Wayne County Public Works' Wastewater Treatment Plant in accordance with a discharge permit issued by Wayne County to BWC. Groundwater will be collected and analyzed from the system during June and October of each year the system is in operation and analyzed for 1,2-dichloropropane, tetrachloroethylene and hexachlorobenzene.

June's report to MDNR issued on schedule
October's done in NOV & not yet reported.

Correct elevation 568 to IGLD 566.57

B. REMEDIAL PROGRAM FOR THE AREA B

Area B lies along the river front north of Area A (Exhibit I).

Groundwater extraction wells will be installed as shown on Exhibit III on 200 ± 50 foot centers 225 ± 25 feet landward from the face of the dock on the Detroit River. The construction details for the extraction wells are shown in Exhibit VI of this appendix. The number of wells and the rate of withdrawal of water therefrom shall at all times be sufficient to halt the flow of contaminated groundwater from Area B to the Detroit River by maintaining the groundwater level in each extraction well at elevation 568 feet or lower. Samples will be collected from the combined flow of all extraction wells in June and October of each year the system is in operation and analyzed for carbon tetrachloride.

See note at bottom of Sec. A.

The MDNR may designate two (2) extraction wells in the system to be maintained as monitor wells.

BWC shall maintain the extraction wells including cleaning, replacement of screens and replacement of any extraction well that will not produce water due to failure of well components. Water removed by the extraction wells shall be discharged to the Wayne County Department of Public Works' Wastewater Treatment Plant in accordance with a discharge permit issued by Wayne County to BWC. A piezometer system shall be installed and water level will be measured on the schedule established in paragraph F of this appendix, to establish the long term pumping rate for each extraction well.

C. REMEDIAL PROGRAM IN AREA C

Area C is located in the northern third of the site as shown in Exhibit I. BWC shall install an extraction well system as shown in Exhibit VII. The number of wells and the rate of withdrawal of water therefrom shall at all times be sufficient to halt the flow of contaminated groundwater from leaving Area C and to maximize the pore displacement of the system by maintaining the groundwater level at elevation no higher than 563 feet at Extraction Well No. 5 as shown on Exhibit VIII of this appendix. The water from the extraction well system will discharge via a piping system to the Wayne County Department of Public Works' Wastewater Treatment Plant in accordance with a discharge permit issued by Wayne County to BWC. The construction details are shown in Exhibits VIII and IX.

Samples will be collected and analyzed from the combined flow from all extraction wells in June and October each year the system is in operation for hexachlorobenzene, hexachlorobutadiene and trichloroethylene.

The remedial program for this area will include grading and filling as necessary to eliminate standing water.

D. REMEDIAL PROGRAM FOR AREA D

Area D is located on the western edge of the South Works along Biddle Avenue, as shown on Exhibit I of this appendix.

The groundwater in this area of the site flows to the west in the general direction of Biddle Avenue (Exhibit II). A subsurface drain system will be installed

REMEDIAL PROGRAM IN AREA D (Continued)

which shall collect the groundwater in Area D and discharge the water collected to the Wayne County Department of Public Works' Wastewater Treatment Plant in accordance with a discharge permit issued by Wayne County to BWC. The location and design details of this drainage system are set forth in Exhibits V and X. A system shall be installed to measure the water level at or near the point of discharge.

Groundwater samples will be collected and analyzed from this system in June and October of each year that the drainage system is in operation for 1,2 dichloropropane, trichloroethylene, and tetrachloroethylene.

A system of three (3) piezometers will be installed in the vicinity of Area D to demonstrate that the slope of the groundwater table is in the direction of the drainage system described above. In the event the building foundations are removed or found not to represent a barrier to the movement of groundwater toward Biddle Avenue during the agreed upon period of operation of the drainage system, the drainage system shall be extended as needed to collect groundwater from Area D.

E. IMPLEMENTATION SCHEDULE

BWC shall complete installation of the remedial program for the South Works on or before December 31, 1986.

F. MONITORING

1. PURPOSE OF MONITORING

The purpose of the water level and water quality monitoring provisions is to determine whether the remedial systems are meeting the requirements of this Consent Decree.

2. WATER LEVELS

Piezometers, extraction wells and monitor wells shall be installed in Areas A and B at the approximate locations shown in Exhibit III by December 31, 1986.

The water level in each piezometer and each extraction well in Areas A, B and D shall be measured monthly for the first year following installation of the piezometers and quarterly thereafter until a demonstration has been made that the collection systems have halted the flow of contaminated groundwater from these areas. Once this demonstration has been made and reported to the MDNR, no further water level measurements will be required and the piezometers may be plugged unless MDNR, for good cause shown, can demonstrate a need for continuation of the water level measurements within sixty (60) days of receipt of the report.

WATER LEVELS (Continued)

The piezometer system required under the program for Area D shall be installed and the required water level measurements will commence within one (1) year after completion of the collection system. The water level shall be measured monthly in each piezometer and in monitor wells MW-3, MW-4, and MW-5 for one (1) year and quarterly thereafter until a demonstration has been made that the flow of contaminated groundwater to the Detroit River has been halted. Once this demonstration has been made and reported to the MDNR, no further water level measurements will be required and the piezometers may be plugged unless MDNR, within sixty (60) days of receipt of the report, can demonstrate a need for continuation of the water level measurements.

3. WATER QUALITY

BWC shall operate all extraction systems for a period ~~of~~ not less than fifteen (15) years. Following that period, BWC may ~~give~~ notice of intent to discontinue operation of any single well and/or extraction system if six (6) consecutive samples collected from such well(s), extraction system, treatment system and associated monitoring well(s) in June and October of each of three (3) consecutive years demonstrates that the concentrations of the chemicals listed in Table I below are less than ten (10) times signal-to-noise using EPA Method 624 or 625. All analysis using EPA Method 625 shall be based on a 1000 ml sample concentrated to 2 ml of extract.

WATER QUALITY (Continued)

TABLE I

Parameter	Remedial Area A	B	C	D
1,2-Dichloropropane	X			X
Tetrachloroethylene	X			
Hexachlorobenzene	X		X	X
Carbon tetrachloride		X		
Hexachlorobutadiene			X	
Trichloroethylene			X	X

*All monitor wells shall be analyzed for chloroform during the above monitoring for the appropriate area(s).

If concentration levels for the appropriate area(s) are achieved, operation of the extraction well or extraction system(s) may be discontinued in accordance with the procedures set forth in Paragraph VI of the Consent Decree.

In any event, in June and October of each year beginning with the twenty-fifth (25th) year of the operation of the system on the South Works, BWC shall collect and analyze samples from each extraction well and monitor well then in operation, which collection and analysis shall continue until the end of the thirty (30) year period provided by the Consent Decree.

G. OTHER CONDITIONS

Within thirty (30) days of the receipt of any groundwater data under this remedial program, BWC shall provide the Department of Natural Resources with the numerical results.

BWC will provide thirty (30) days prior written notice to the Wayne County Public Works of its intent to discontinue the sampling of any groundwater source discharging to the Wayne County Public Works' Wastewater Treatment Plant.

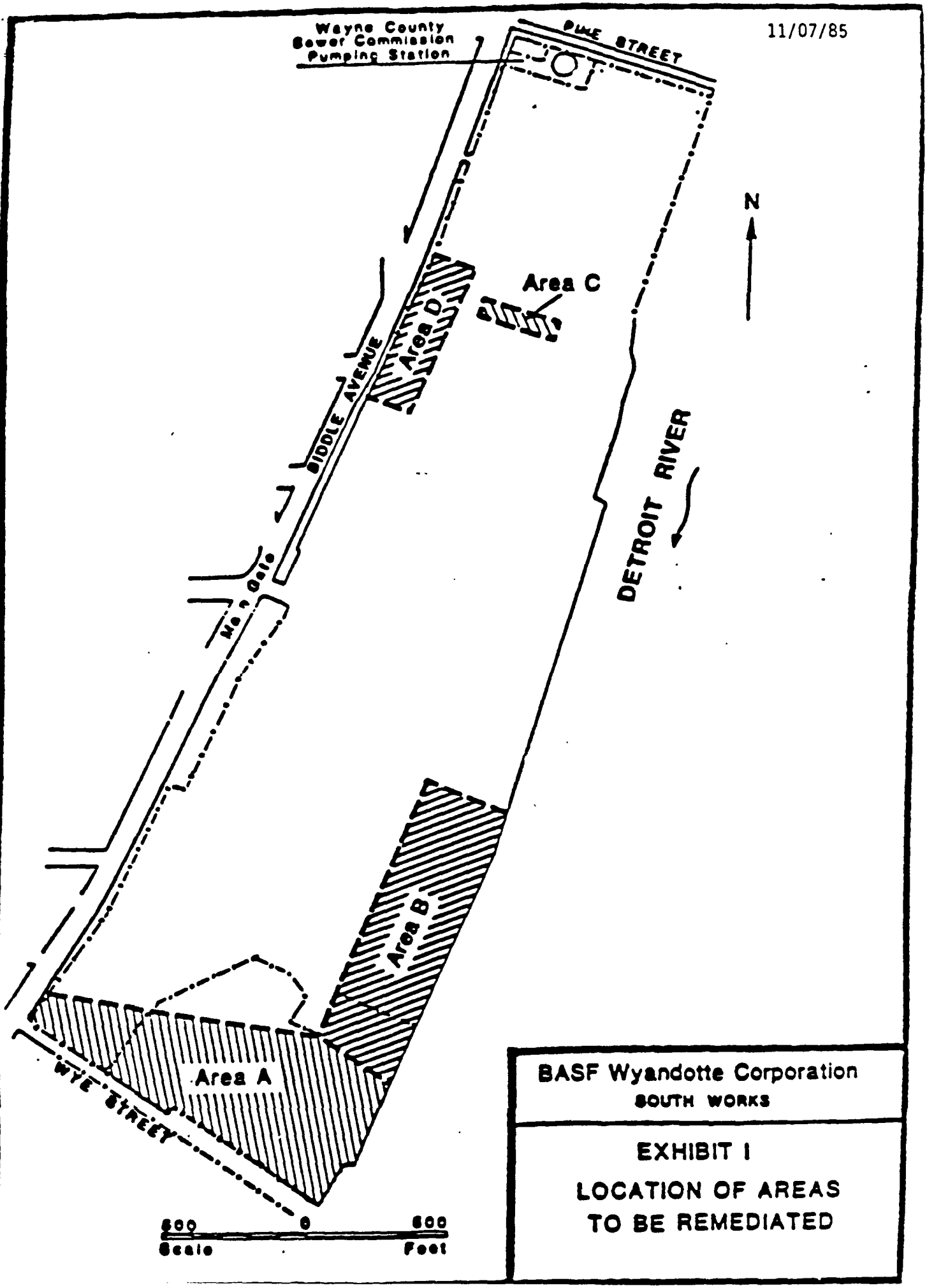
OTHER CONDITIONS (Continued)

BWC shall make application to discharge the groundwater collected from these remedial systems to the Wayne County Public Works' Wastewater Treatment Plant. In the event the characteristics of the groundwater require Wayne County to impose pretreatment as a condition precedent to discharge, BWC may elect to comply with the County's pretreatment requirements or, alternatively, BWC may make application for direct discharge to the Detroit River. In the event Wayne County is required to reject the groundwater discharge from any of the above systems, BWC shall make application for the direct discharge of such groundwater to the Detroit River. Should BWC make application for a permit to discharge groundwater to the Detroit River, the Michigan Department of Natural Resources shall review the application in accordance with then applicable regulations and shall not unreasonably deny the permit. Provided BWC (a) gives notice to MDNR within five (5) working days of receipt of notice by the County of its intent to reject BWC's discharge, (b) applies for a permit for direct discharge to the Detroit River within sixty (60) days following receipt of such notice by the County, and (c) takes all reasonable steps necessary to maintain a permitted discharge to the POTW during the period following the County's adoption of the pretreatment requirements, the groundwater collection systems shall not be operated unless a permit to discharge to Wayne County or, alternatively, to the Detroit River, has been issued and remains in effect. If BWC challenges the necessity for or the validity of any permit condition, BWC shall construct, maintain and operate treatment technology which has been agreed upon by the parties or which has been determined to be appropriate by this Court under Paragraph VII.C. of the Consent Decree until such challenge(s) has been resolved.

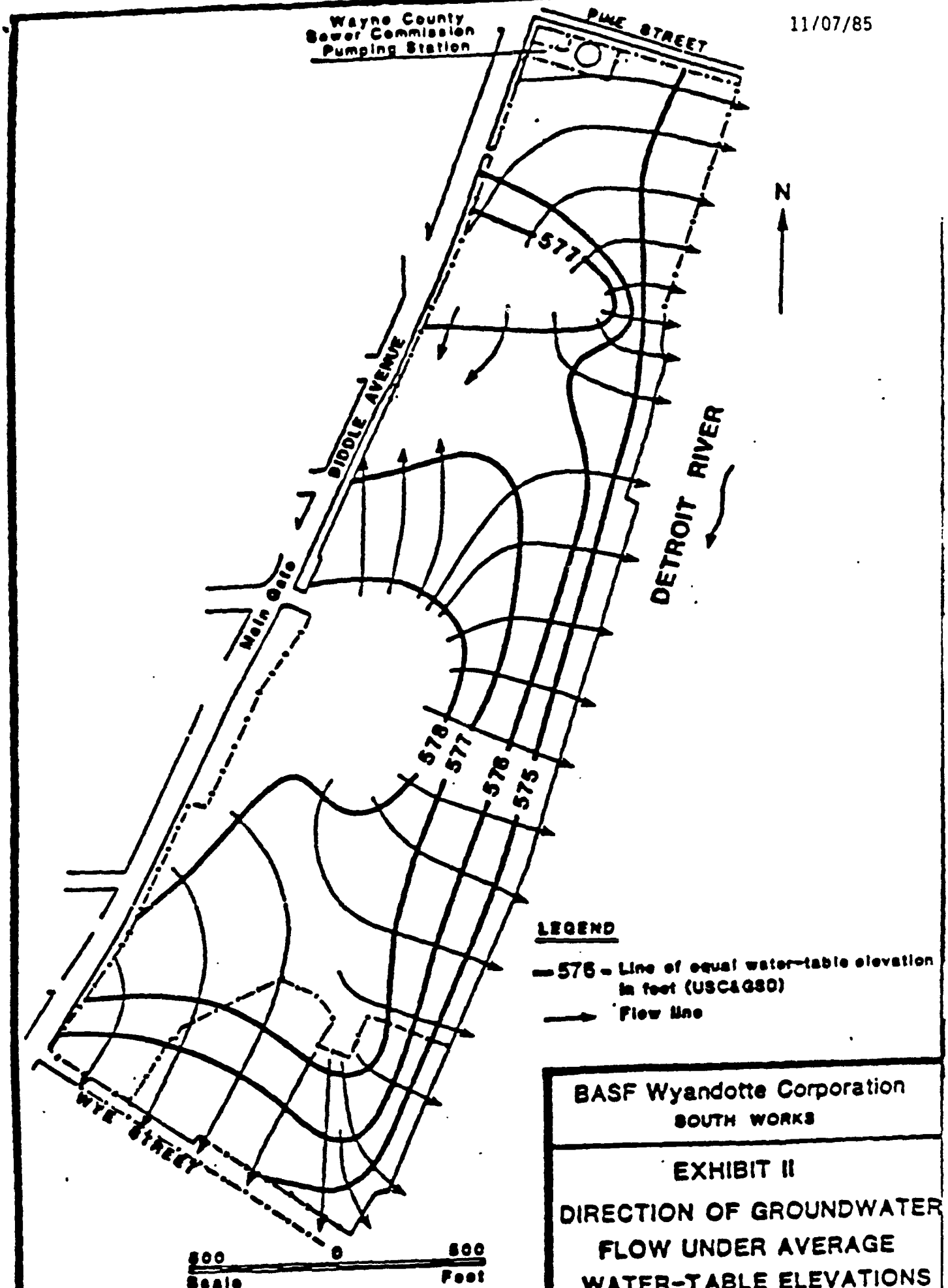
OTHER CONDITIONS (Continued)

Upon application by BWC at any time after a fifteen (15) year period, the Department of Natural Resources shall determine whether the operation of any of the above systems is no longer necessary to comply with conditions established by then existing law or regulations. If the operation of such systems(s) is not required, it may be discontinued. BWC shall bear the burden of persuasion by a preponderance of the evidence that continued operation of the system(s) is no longer necessary.

Soils and sludges excavated during construction of any groundwater collection system shall be managed in accordance with the law.


11/07/85
Wayne County
Sewer Commission
Pumping Station
PINE STREET
N
Area C
Area D
BIDDLE AVENUE
DETROIT RIVER
Area B
Area A
WYE STREET
600
0
600
Scale
Feet
BASF Wyandotte Corporation
SOUTH WORKS
EXHIBIT I
LOCATION OF AREAS
TO BE REMEDIATED

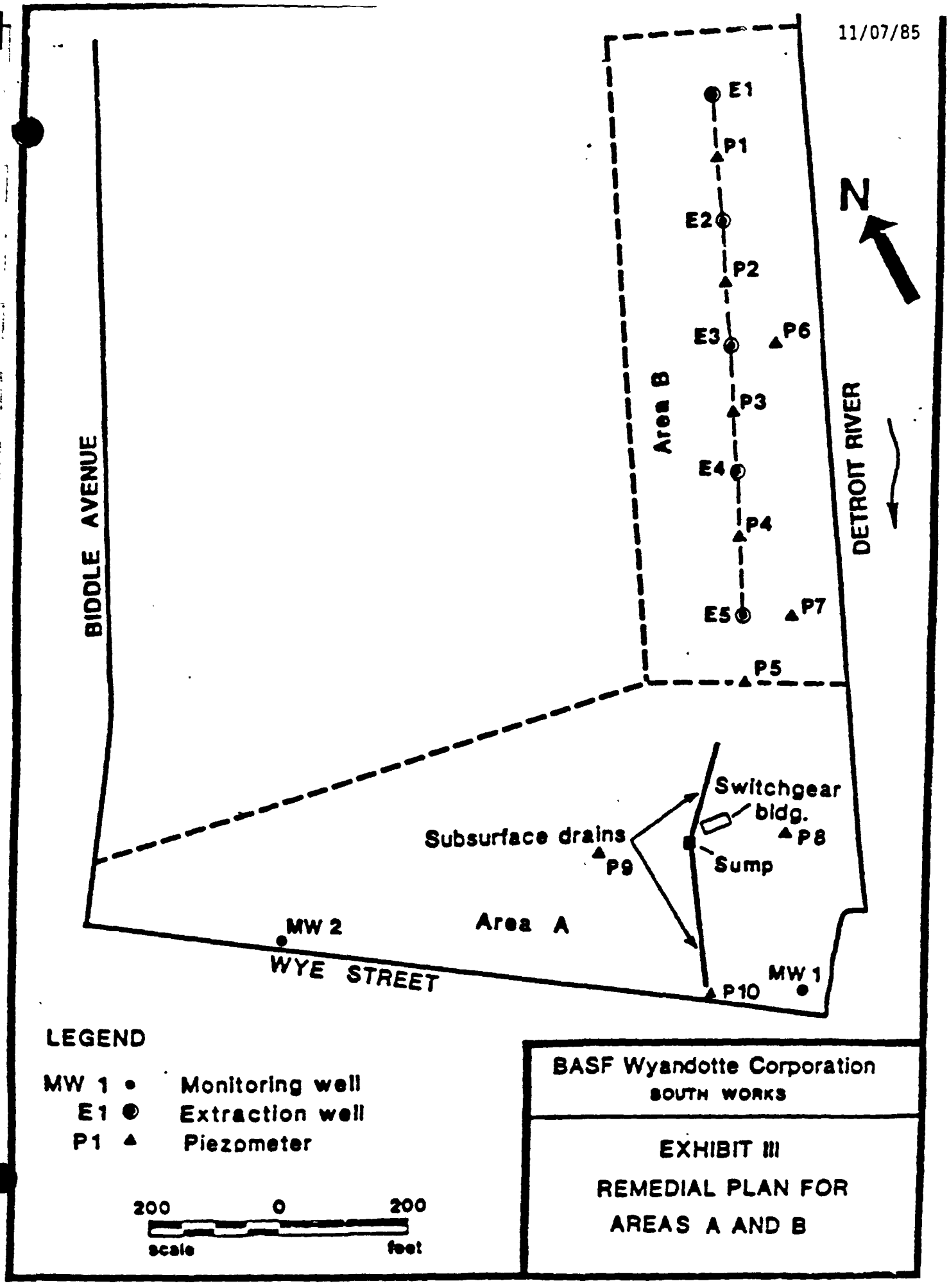
11/07/85

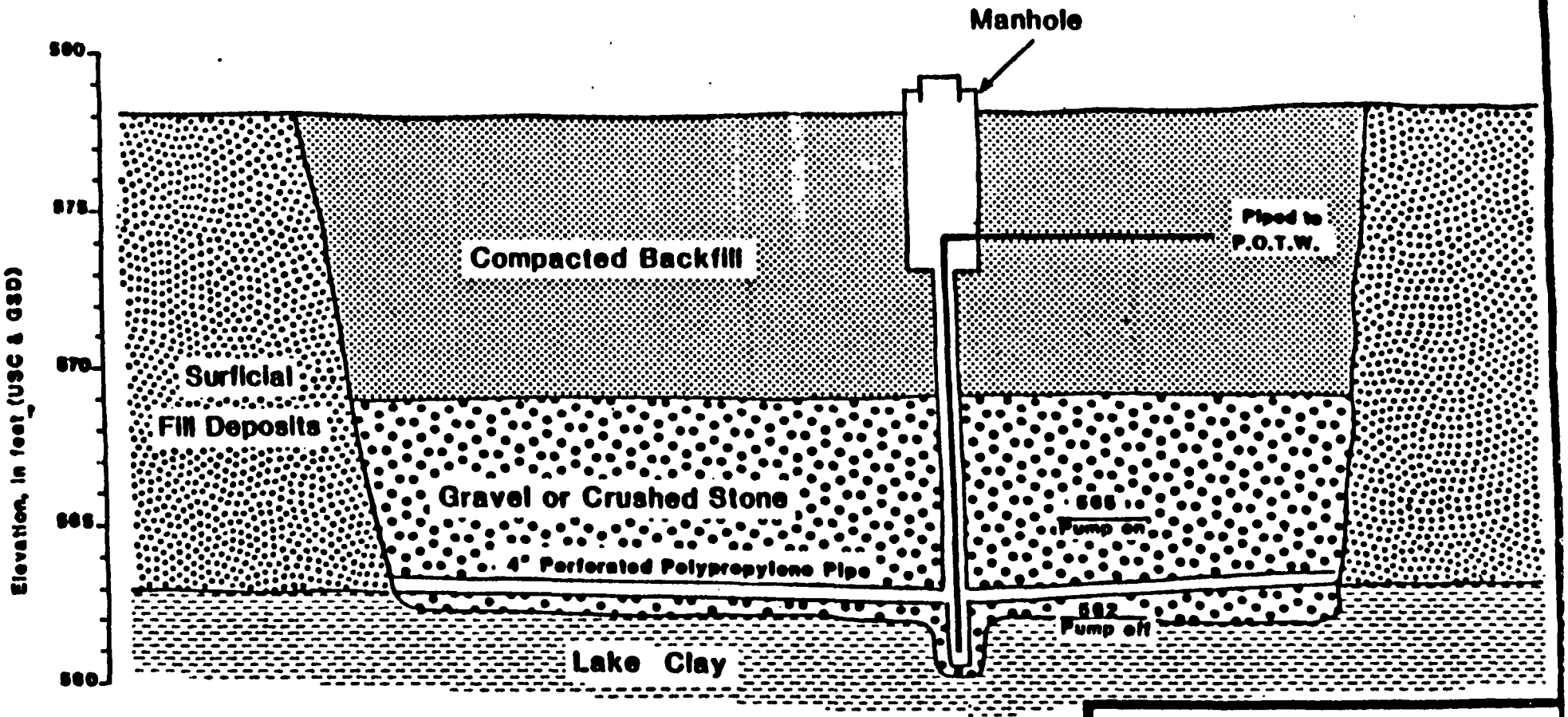


BASF Wyandotte Corporation
SOUTH WORKS

EXHIBIT II

DIRECTION OF GROUNDWATER FLOW UNDER AVERAGE WATER-TABLE ELEVATIONS


11/07/85
E1
P1
E2
P2
E3
P6
P3
E4
P4
E5
P7
P5
N
Area B
DETROIT RIVER
BIDDLE AVENUE
Switchgear bldg.
P8
Subsurface drains
P9
Sump
Area A
MW 2
WYE STREET
P10
MW 1
LEGEND
MW 1 • Monitoring well
E1 ◉ Extraction well
P1 ▲ Piezometer
200 0 200
scale feet
BASF Wyandotte Corporation
SOUTH WORKS
EXHIBIT III
REMEDIAL PLAN FOR
AREAS A AND B

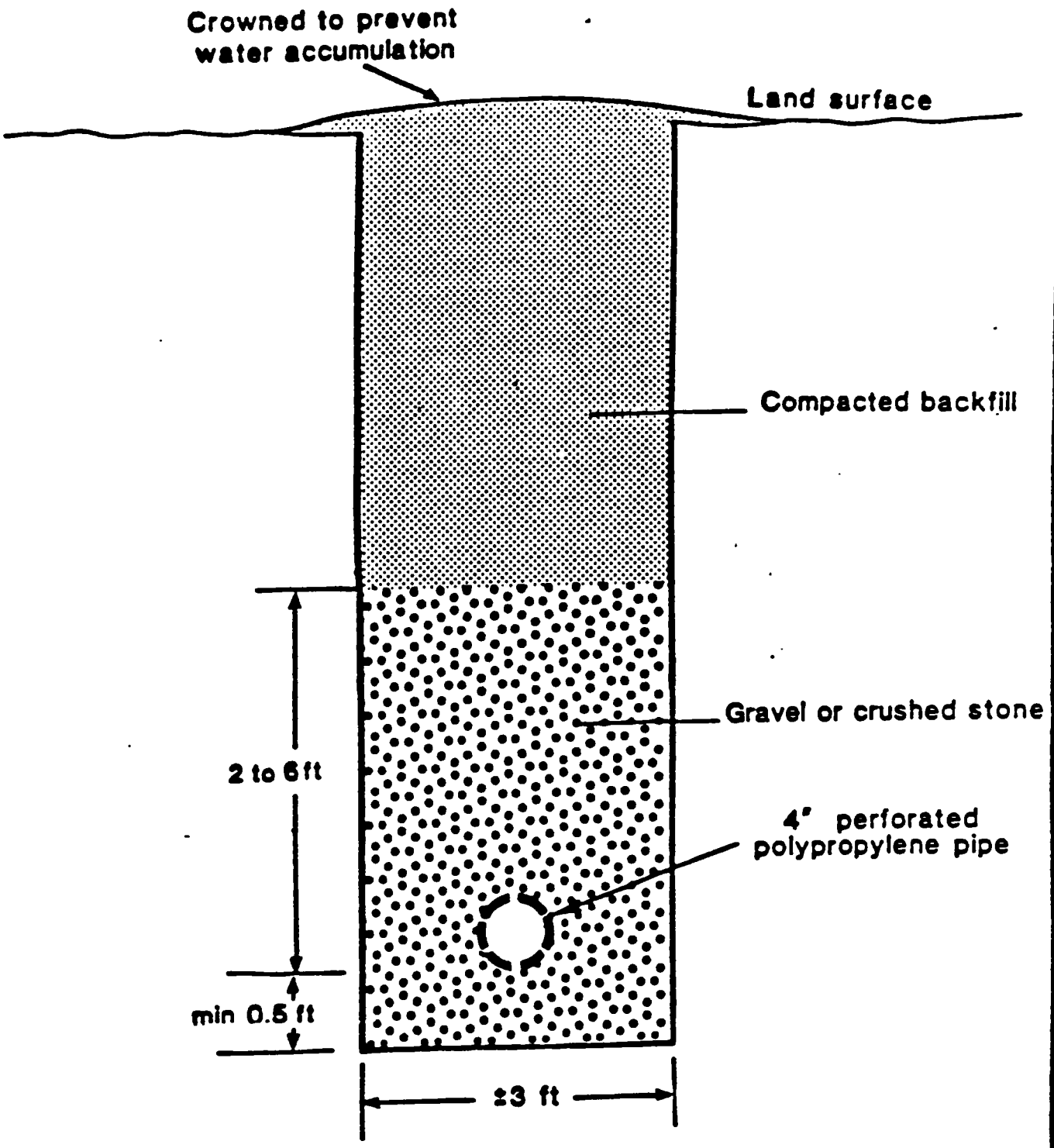


BASF Wyandotte Corporation
SOUTH WORKS

EXHIBIT IV
PROFILE ALONG
DRAINS - AREA A

11/07/85

11/07/85

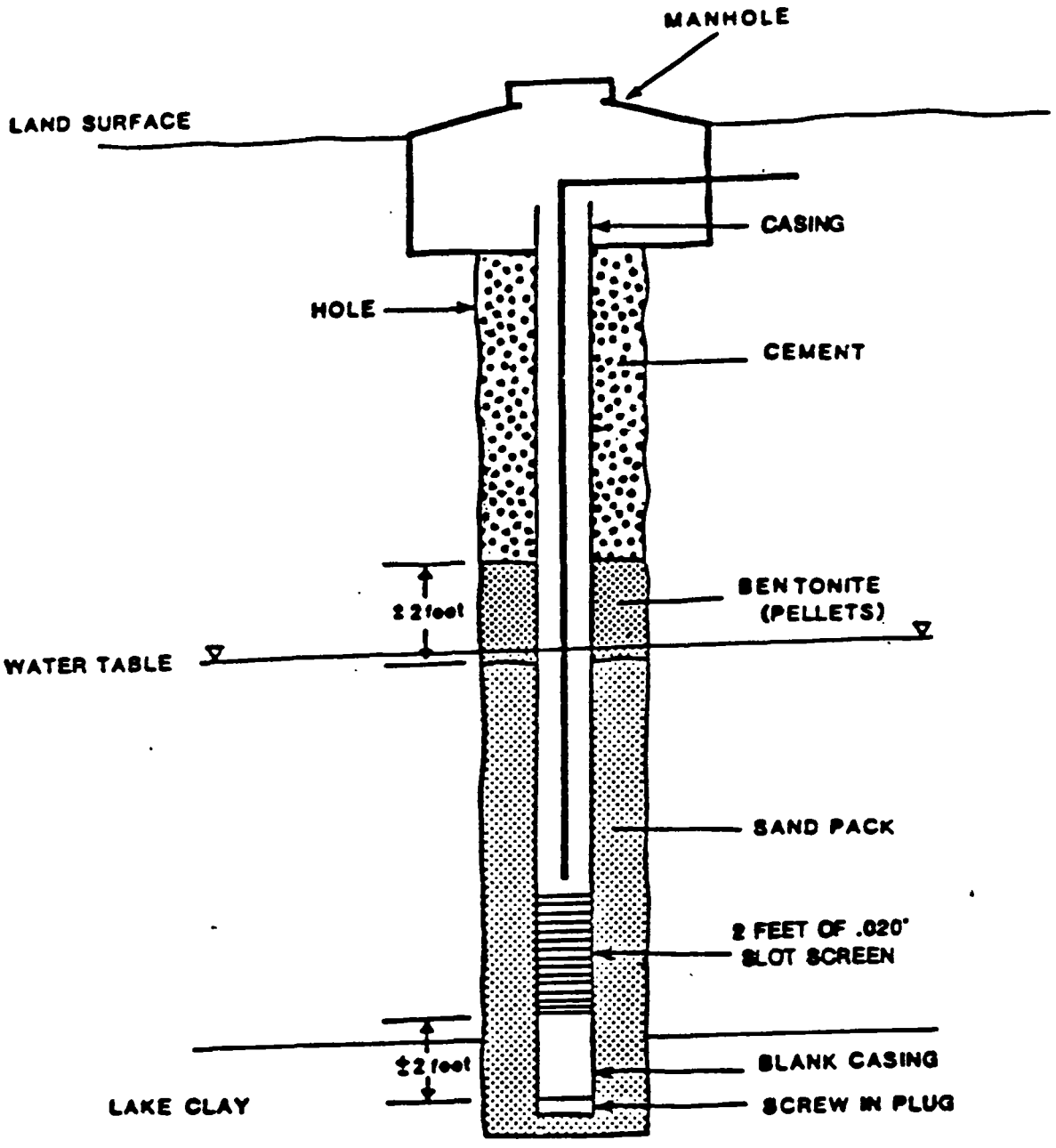


NOT TO SCALE

BASF Wyandotte Corporation
SOUTH WORKS

EXHIBIT V
SCHEMATIC DIAGRAM
OF TYPICAL
DRAIN CONSTRUCTION

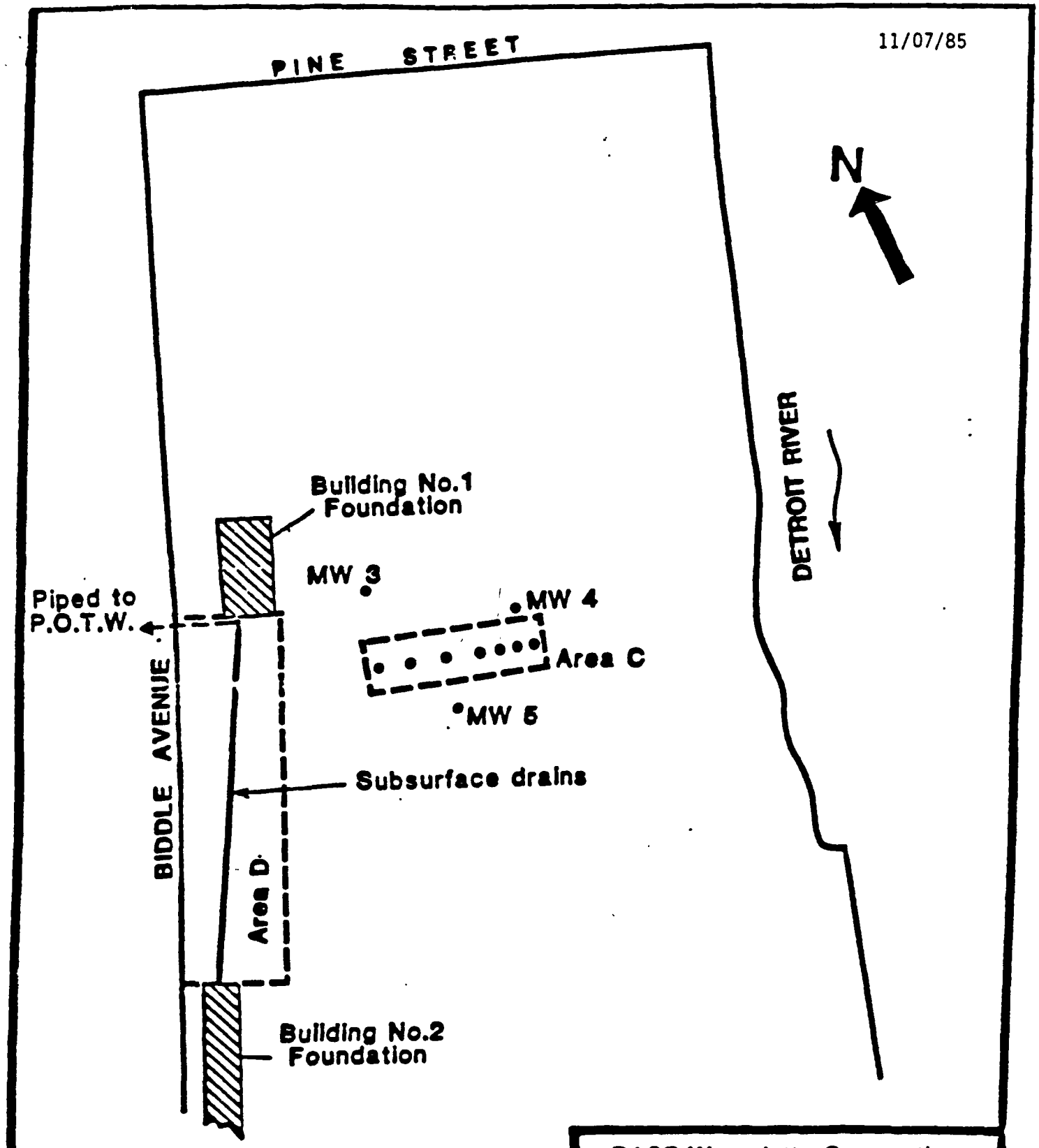
11/07/85



BASF Wyandotte Corporation
SOUTH WORKS

EXHIBIT VI
CONSTRUCTION DETAILS
OF EXTRACTION WELLS
AREA B

11/07/85



LEGEND

MW 4 • Monitoring well

• Extraction well

200 0 200

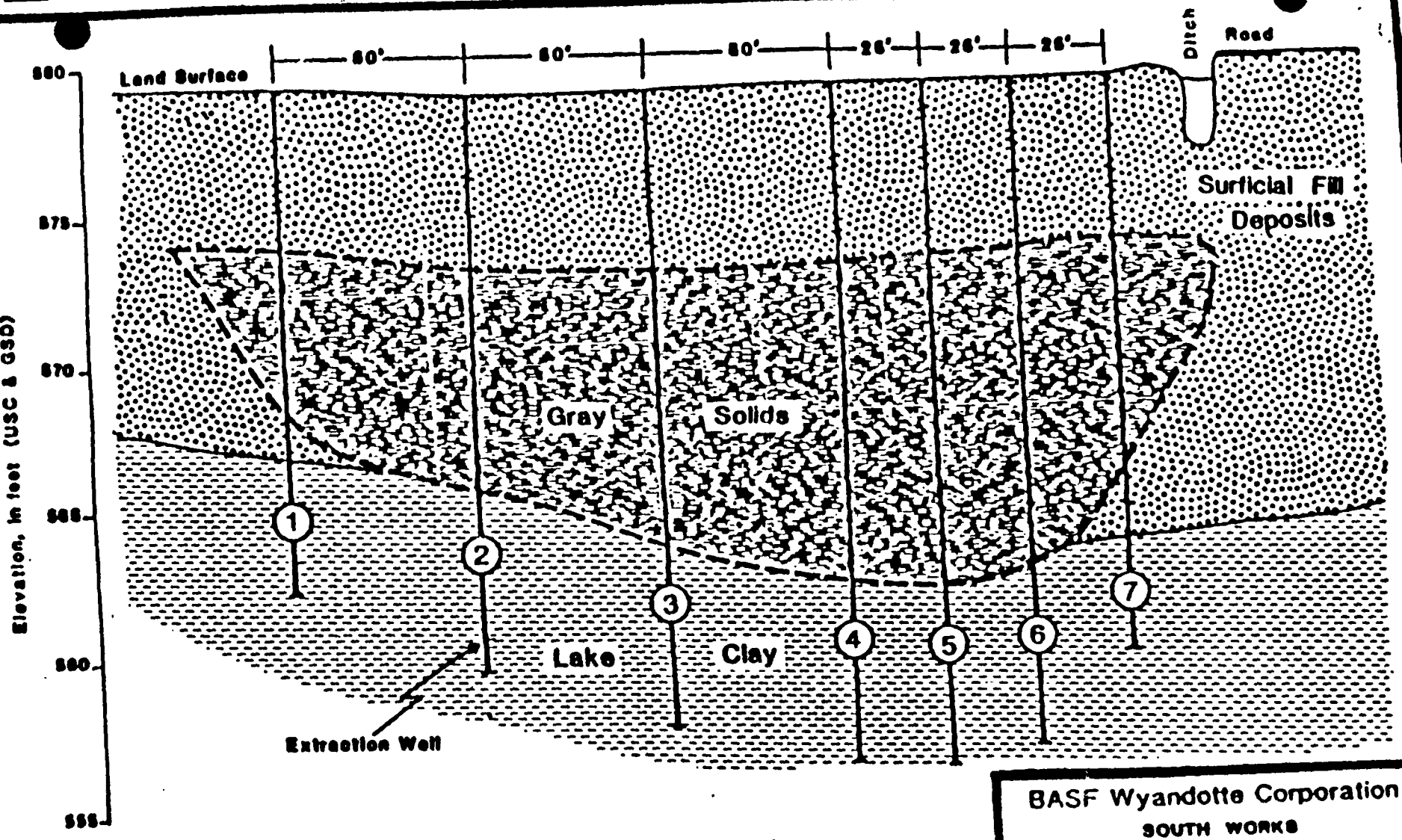
scale feet

BASF Wyandotte Corporation
SOUTH WORKS

EXHIBIT VII

REMEDIAL PLAN FOR

AREAS C AND D



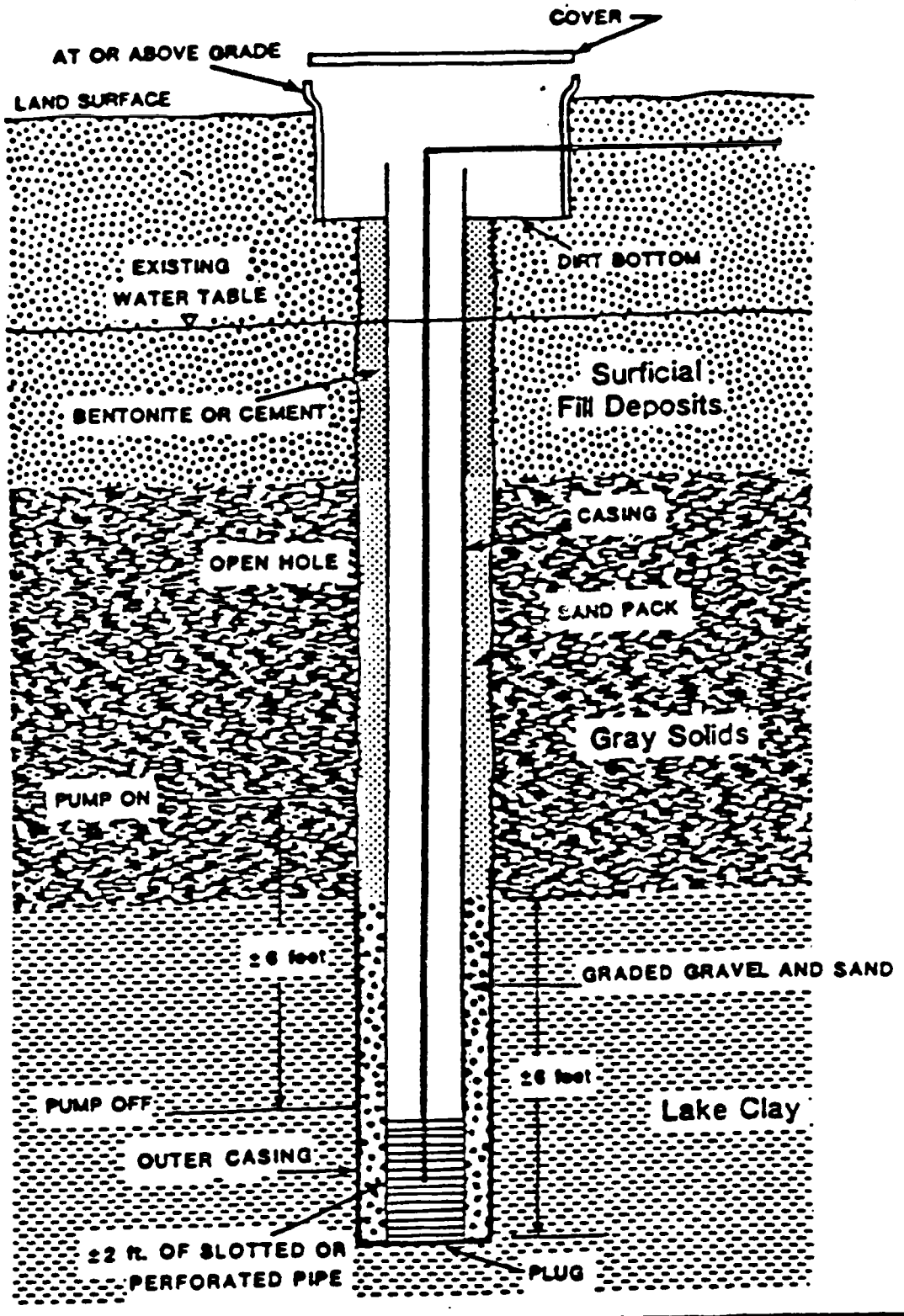
NOTE : See Exhibit IX for extraction well construction details.

BASF Wyandotte Corporation
SOUTH WORKS

EXHIBIT VIII
PROFILE ALONG LINE
OF WELLS-AREA C

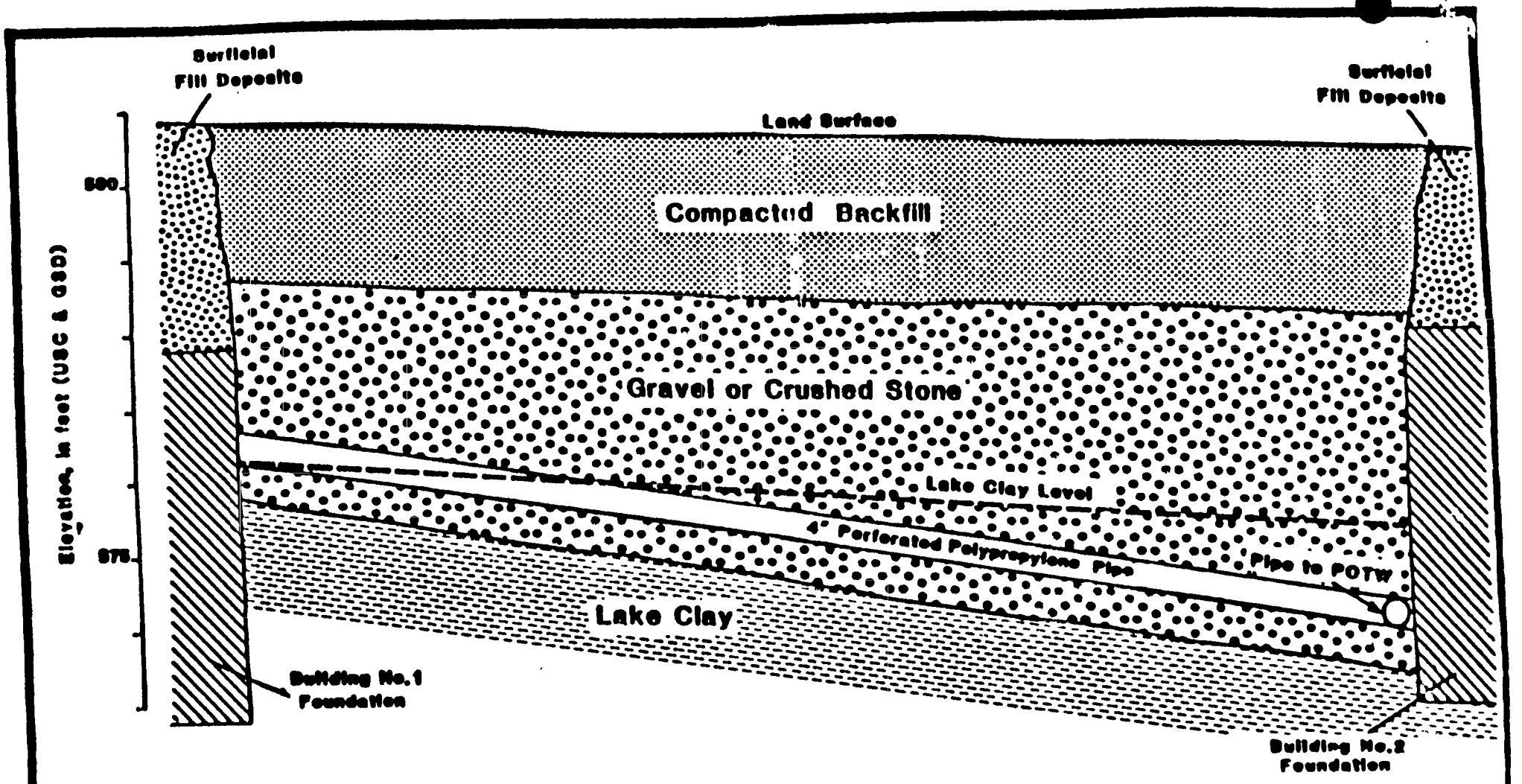
11/07/85

11/07/85



BASF Wyandotte Corporation
SOUTH WORKS

EXHIBIT IX
CONSTRUCTION DETAILS
OF EXTRACTION WELLS
AREA C



BASF Wyandotte Corporation
SOUTH WORKS

EXHIBIT X

PROFILE ALONG
DRAIN – AREA D

11/07/85

APPENDIX E

WASTEWATER DISCHARGE PERMIT

WAYNE COUNTY OFFICE OF PUBLIC SERVICES
DEPARTMENT OF PUBLIC WORKS
415 CLIFFORD STREET
DETROIT, MICHIGAN 48226

CLASS D WASTEWATER DISCHARGE PERMIT

Permit No. D11311
Expiration Date 2-14-92

Permittee Name BASF Corporation
Address of Premise Discharging Wastewater 1609 Biddle Avenue
Wyandotte, MI 48192

Permittee Mailing Address same

Permittee Contact(s) Dale Roush Phone 246-6106

Standard Industrial Classification Code (SIC) 2810, 2090, 2860, 2891, 3079

The above named Permittee is hereby authorized to discharge wastewater into the Wayne County Wastewater Facilities, subject to the terms and conditions specified herein:

1. Payment of an **ANNUAL SURVEILLANCE FEE** of $ 525.00 which shall be subject to revision as determined by the Wayne County Department of Public Works, with payment due on 2-15-87 as per Item 3 of the terms and conditions contained herein.

2. Compliance with all General Discharge Prohibitions set forth in Article V of the Wayne County Sewer Use Ordinance, dated March 20, 1986, as ammended.

3. Terms and Conditions of Permit, items 1-15, attached herewith.

4. Compliance with the Parameter, Discharge, Monitoring, and Reporting Requirements and Compliance Schedule contained herein.

VERIFICATION OF PERMIT:
Name of Community City of Wyandotte
Signature of Official _____
Title _____
Date _____

AUTHORIZATION OF PERMIT: Wayne County Department of Public Works
Signature of Official _____
Title Deputy Director - Dept of Public Works
Date 2/16/87

WAYNE COUNTY DEPARTMENT OF PUBLIC WORKS
CLASS D WASTEWATER DISCHARGE PERMIT

TERMS AND CONDITIONS OF PERMIT NO. D-11311

1. The conditions of the Wastewater Discharge Permit shall be uniformly enforced by the Director in accordance with the provisions set forth in Article V of the Sewer Use Ordinance as established by the Department of Public Works.

2. A wastewater questionnaire shall be filed with the Department prior to approval of the Permit. Based on the information obtained through surveillance programs initiated by the Department, an annual surveillance fee shall be calculated according to the schedule established by the Department.

3. The permittee shall agree to pay to the local municipality the regular wastewater service charges, annual surveillance fees, and surcharges as established by the Department and/or local municipality having jurisdiction.

4. Class D Wastewater Discharge Permits must be renewed: (a) every five (5) years; (b) whenever the use of a new parameter not reported in the previous permit is proposed to be discharged; or, (c) when the amount of wastewater discharged increases by more than 50% from that reported in the previous permit.

5. The permittee shall apply for a permit renewal at least 180 days prior to expiration date of this permit.

6. The terms and conditions of the Permit may be subject to modification or change by the Department during the life of the Permit as limitations or requirements as identified in Article V of the Sewer Use Ordinance are modified and changed. The permittee shall be informed of any proposed changes in his Permit at least 30 days prior to the effective date of change. Any changes or new conditions in the Permit shall include a reasonable time schedule for compliance.

7. The permittee shall agree to furnish the Department, upon request, any additional information relating to the installation or use of the sewer for which this permit is sought.

8. The permittee shall agree to properly operate and maintain any industrial wastewater pretreatment facilities, as may be required as a condition of the acceptance into the public sewer of the industrial wastes involved, in an efficient manner at all times, and at no expense to the County.

9. The permittee shall agree to cooperate with the Department or its representatives in their inspecting, sampling and study of wastes or facilities provided for pretreatment.

10. The permittee shall agree to notify the Department immediately of any accident, negligence breakdown of pretreatment equipment or other occurrence that allows discharge into the sewer system of any wastes or process waters not covered by this permit.

11. The permittee shall notify the Department immediately upon the occurrence of a "slug" loading (or accidental discharge) to the county sewer system. This "slug" could be at a flow rate and/or pollutant concentration which will cause interference with the POTW or a passthrough. The notification shall include location of discharge, date and time thereof, type of waste, concentration and volume, and corrective actions taken.

    The permittee who discharges "slugs", or accidental discharges shall be liable for any expense, loss or damage to the POTW, in addition to the amount of any fines imposed by the Department on account thereof under State or Federal law.

12. Wastewater Discharge Permits are issued to a specific user for a specific operation. The permit shall not be reassigned, transferred or sold to a new owner or to different premises.

13. It is understood and agreed that the permit and rights granted herein are subject to revocation, after notice and an opportunity for a hearing, for the following reasons:

    1. Violation of the terms and conditions set forth, attached, and made a part of this permit.

    2. Violation of any applicable local ordinances, Wayne County Sewer Use Ordinance, or applicable State and Federal laws, statutes, or regulations.

    The notice of revocation shall set forth specifically the grounds for which the revocation is sought, a place and time for a hearing, granting the permittee a reasonable time to prepare. The permittee hereby agrees that notice may be perfected by certified mail, postage prepaid and properly addressed to the permittee at the address listed in this permit, subject to requirements of the enforcement procedures adopted by the Wayne County Department of Public Works.

WAYNE COUNTY DEPARTMENT OF PUBLIC WORKS
CLASS D WASTEWATER DISCHARGE PERMIT

TERMS AND CONDITIONS OF PERMIT NO. D-11311

14. It is further understood, that a violation of any of the terms or conditions of this permit may, after notice and opportunity for a hearing, operate to suspend and annul any and all rights acquired under this permit and the permit holder shall surrender the permit and cease any operations and remove any connection made pursuant to this permit.

15. Additional Comments:

WAYNE COUNTY DEPARTMENT OF PUBLIC WORKS
CLASS D WASTEWATER DISCHARGE PERMIT

PRETREATMENT REQUIREMENTS OF PERMIT NO. D-11311

All Pretreatment Standards set forth by the Environmental Protection Agency for this type of industry shall be conditions of this permit. In addition, all Wayne County regulations regarding discharge to the Wayne County Metropolitan Sewerage System, set forth in Article V of the Wayne County Sewer Use Ordinance (S.U.O.) shall apply. When limitations set forth in Article V and Appendix A are exceeded, the discharge may be acceptable upon payment of a surcharge as set forth in the Schedule of Rates.

Regarding the regulations set forth in Article V, the following limitations shall apply:

I. PARAMETER REQUIREMENTS

A. North Works (Combined Discharge at Alkali St.)

Parameter	Limitation	Requirements
pH	5.0 - 9.5 (for grab sample)	Compliance with the limitations specified.
	6.5 - 8.0 (daily ave.)	

WAYNE COUNTY DEPARTMENT OF PUBLIC WORKS
CLASS D WASTEWATER DISCHARGE PERMIT

PRETREATMENT REQUIREMENTS OF PERMIT NO. D-11311

II. DISCHARGE CONDITIONS

1. Discharge of groundwater from the North and South Works will be permitted. The North Works groundwater shall be pretreated by an activated carbon system prior to entering the Wayne County Sanitary Sewer System.

   The South Works groundwater shall come from extraction wells and be collected at two (2) main areas prior to entering the Wayne County Sanitary Sewer System.

2. Permittee agrees to immediately cease all pumping of groundwater to the sanitary sewer system if conditions at the Wyandotte Plant (POTW) warrant such action. This would be a temporary situation such as during a plant upset, power failure, etc....

3. If it is determined that the Wyandotte POTW can no longer accept the groundwater wastewater, the permittee will be given at least a 45 day notice before they will be required to discontinue pumping the groundwater into the Wayne County Sanitary Sewer System.

4. The discharge of groundwater shall be permitted on a year around basis except during wet weather conditions and subsequently shall be coordinated with Wayne County Laboratory personnel (Otis Walker at 285-5217).

WAYNE COUNTY DEPARTMENT OF PUBLIC WORKS
CLASS D WASTEWATER DISCHARGE PERMIT

III. MONITORING REQUIREMENTS OF PERMIT NO. D-11311

Sample Location	Parameter	Frequency	Limitation
North Works Groundwater Pretreatment System Effluent	Flow	Daily	72,000 GPD
	1,2-Dichloropropane	1/Mo Grab	
	1,2-Dichloroethane	1/Mo Grab	
North Works Combined Discharge at Alkali St.	(2) 1,1,1-trichloroethane	2/Yr Grab	
	(2) Toluene	2/Yr Grab	
	(3) Benzene	2/Yr Grab	
South Works Groundwater Collection Systems I&II	Flow	Daily	43,200 GPD
South Works Groundwater Collection System I	1,2-Dichloropropane	1/Mo Grab	
	Tetrachloroethylene	1/Mo Grab	
	Hexachlorobenzene	1/Mo Grab	
	Carbon tetrachloride	1/Mo Grab	
	Chloroform	1/Mo Grab	
South Works Groundwater Collection System II	1,2-Dichloropropane	1/Mo Grab	
	Trichloroethylene	1/Mo Grab	
	Hexachlorobenzene	1/Mo Grab	
	Hexachlorobutadiene	1/Mo Grab	
	Tetrachloroethylene	1/Mo Grab	
	Chloroform	1/Mo Grab	

(1) BASF may discontinue the analysis of any parameter for any collection system when the analytical results are less than 10 mg/l for six (6) consecutive sampling periods. BASF shall notify the Wayne County Department of Public Works thirty (30) days in advance of its intent to discontinue any sampling or analysis.

(2) Following Windshield Adhesive Plant startup.

(3) Following Expanded Polypropylene Plant startup.

WAYNE COUNTY DEPARTMENT OF PUBLIC WORKS
CLASS D WASTEWATER DISCHARGE PERMIT

PRETREATMENT REQUIREMENTS OF PERMIT NO. D-11311

IV. COMPLIANCE SCHEDULE (North Works)

Permittee shall submit the attached Compliance Certification Statement within thirty (30) days of the effective date of this permit. The following compliance sampling criteria shall apply:

Parameters, per Requirements, P.5	Sample Type	Sample Frequency	Sampling Duration
pH	grab	2/day	4 consecutive normal operating days.

If the permittee is determined to be in noncompliance and a variance (See Section 2.03 (a)(5) of the Wayne County Sewer Use Ordinance) is not granted, a mutually acceptable compliance schedule shall be developed using the parameters listed below:

		Date
a.	Hire Engineer (If Necessary)	
b.	Submit proposal/plans	Within 60 days of effective date of this permit.
c.	Equipment ordered	
d.	Equipment received	
e.	Installation started	
f.	Installation completed	
g.	System on-line	Within 12 months from submittal of compliance plans (b.)
h.	Compliance achieved	Within 45 days of System On-line (g.)

V. REPORTING REQUIREMENTS

1. A six-month report will be due during the month of June 1987 from the permittee. This is required per 40 CFR Ch. I (7-1-85 edition) Part 403.12e, entitled "Periodic reports on continued compliance". Thereafter, the report will be due during December and June of every year. This report shall indicate the nature and concentration of pollutants in the effluent which are limited by Categorical Pretreatment Standards or by the Wayne County Sewer Use Ordinance. Also, "this report shall include a record of measured or estimated average and maximum daily flows for the reporting period..... ." The report shall also summarize the self-monitoring data required by this Permit.

2. Self-monitoring Reports shall be submitted to the WCDPW on a monthly basis.

3. A tabulation of pumping activities for the month, and the year to date totals, shall be submitted to the WCDPW on a monthly basis.

4. The permittee shall submit a special report, describing the activated carbon pretreatment system for the North Works, to the Wayne County Department of Public Works within 30 days of the effective date of this permit.

BASF Corporation
Chemicals Division

BASF

February 29, 1988

Mr. Daniel R. Helm, Engineer
Wayne County Dept. of Public Works
797 Central Avenue
Wyandotte, MI 48192

Dear Mr. Helm:

Re: BASF Corporation Chemicals Division
Permit No. D 11311, Reporting Requirements

Confirming our January 12, 1988 phone conversation, your department considers the BASF Corporation Chemicals Division monthly report format does include the information required by the six (6) month reporting requirement specified in Section V of the reference permit.

I have taken an extra step for your convenience and have developed the attached data table which summarizes on a single page the self-monitoring data BASF has collected. As you can see, the data clearly indicates BASF's continuing compliance to Permit D 11311 requirements. In fact, the conditions (reference permit Section III, Notation (1) which allow BASF to discontinue regular organic chemical analysis on practically all of the discharges have been attained.

Therefore, BASF hereby notifies your office that it intends to discontinue, for the purposes of meeting D 11311 permit requirements, all sampling and analysis of groundwaters which have met conditions described in Section III, Notation (1), page 7.

Yours very truly,

H. D. Roush
Manager
Quality Assurance and
Environmental Affairs

mh
att.

cc: T. Galloway

bc: LAAnderson, DPThiel

1609 Biddle Avenue, Wyandotte, Michigan 48192 (313) 246-6100

BASF CORPORATION CHEMICALS DIVISION

PERIODIC REPORT ON CONTINUED COMPLIANCE

JULY - DECEMBER 1987

Sample Location	Parameter Units, mg/l		July	Aug.	Sept.	Oct.	Nov.	Dec.
North Site Combined Discharge @ Alkali Street	pH		7.0	7.0	7.8	7.6	9.1	8.8
	1,1,1-Trichloroethane							
	Toluene						ND	ND
	Benzene						ND	ND
North Site Pretreatment System Effluent	Flow (Kgal./D)		17.3	17.8	7.4	23.2	17.1	19.3
	1,2-Dichloropropane	(None	(ND)	ND	ND	ND	ND	ND
	1,2-Dichloroethane	Detected)	ND	ND	ND	ND	ND	ND
South Site Groundwater Systems I and II	Flow (Kgal./D)		23.5	18.8	7.9	21.5	14.0	23.5
South Site Groundwater System I	1,2-Dichloropropane		ND	ND	ND	ND	ND	ND
	Tetrachloroethylene		ND	ND	ND	ND	ND	ND
	Hexachlorobenzene		ND	ND	ND	ND	ND	ND
	Carbon Tetrachloride		ND	ND	ND	ND	ND	ND
	Chloroform		ND	ND	ND	ND	ND	ND
System II	1,2-Dichloropropane		32	24	ND	55	100	151
	Trichloroethylene		ND	1	181	73	2	ND
	Hexachlorobenzene		1	1	ND	ND	ND	ND
	Hexachlorobutadiene		ND	3	ND	ND	ND	ND
	Tetrachloroethylene		5	ND	7	2	ND	1
	Chloroform		2	ND	ND	ND	ND	2

APPENDIX F

FINANCIAL RESPONSIBILITY

BASF Corporation

BASF

Frederick W. Bernthal
Executive Vice President
Finance

March 31, 1987

Hazardous Waste Division
Environmental Protection Bureau
Department of Natural Resources
P.O. Box 30028
Lansing, MI 48909

Dear Sirs:

I am the chief financial officer of BASF Corporation, 8 Campus Drive, Parsippany, New Jersey, 07054. This letter is in support of the use of the financial test to demonstrate financial responsibility for the liability coverage and closure and/or post closure care as specified in Subpart H of 40 CFR Parts 264 and 265.

The firm identified above is the owner or operator of the following facilities for which liability coverage for sudden accidental occurrences is being demonstrated through the financial test specified in Subpart H of 40 CFR Parts 264 and 265:

Facility Address	EPA ID No.	Sudden Accidental Pollution Liability Coverage (Individual Incident/Annual Aggregate)
Dinuba Agricultural Station 10181 Avenue 416 Dinuba, CA 93618	CAT000646117	$1,000,000/2,000,000
Columbia Ave. Facility 491 Columbia Ave. Holland, MI 49423	MID006411953	$1,000,000/2,000,000

AZ.BASIC DI.

APR 87 1:4

Eight Campus Drive Parsippany, New Jersey 07054 (201) 397-2880 Telex: 136-133 Telecopier (201) 397-2877

Facility Address	EPA ID No.	Sudden Accidental Pollution Liability Coverage (Individual Incident/Annual Aggregate)
Milford Works 5935 Milford Avenue Detroit, MI 48210	MID001868538	$1,000,000/2,000,000
Wyandotte Works 1609 Biddle Avenue Wyandotte, MI 48192	MID064197742	$1,000,000/2,000,000
Belvidere Works James Street Belvidere, NJ 07823	NJD082988056	$1,000,000/2,000,000
FDO Clifton Works 85 Third Street Clifton, NJ 07015	NJDO02155067	$1,000,000/2,000,000
Hawthorne Works 150 Wagaraw Road Hawthorne, NJ 07506	NJD002165371	$1,000,000/2,000,000
Kearny Works 50 Central Avenue So. Kearny, NJ 07032	NJD046941530	$1,000,000/2,000,000
Enka Works Sand Hill Road Enka, NC 28728	NCD052813250	$1,000,000/2,000,000
Agricultural Research Center P.O. Box 13528 Research Triangle Park, NC 27709	NCD139687974	$1,000,000/2,000,000
Clemson Works P.O. Box 488 Central, SC 29630	SCD052944295	$1,000,000/2,000,000
Whitestone Works P.O. Box 2108 Spartanburg, SC 29302	SCD077990638	$1,000,000/2,000,000
Freeport Works 602 Copper Road Freeport, TX 77541	TXD008081697	$1,000,000/2,000,000

Facility Address	EPA ID No.	Sudden Accidental Pollution Liability Coverage (Individual Incident/Annual Aggregate)
Williamsburg Works P.O. Drawer D Williamsburg, VA 23187	VAD990710642	$1,000,000/2,000,000
Huntington Works 24th St. & 5th Ave. Huntington, WV 27522	WVD000068601	$1,000,000/2,000,000

The firm identified above guarantees, through the corporate guarantee specified in Subpart H of 40 CFR Parts 264 and 265, liability coverage for sudden accidental occurrences at the following facilities owned or operated by the following subsidiaries of the firm: NONE.

1. The firm identified above owns or operates the following facilities for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in Subpart H of 40 CFR Parts 264 and 265. The current closure and/or post-closure cost estimates covered by the test are shown for each facility:

Facility Address	EPA ID No.	Current Closure Cost Estimate
Columbia Agricultural Facility 491 Columbia Avenue Holland, MI 49423	MID006411953	$59,560
Milford Works 5935 Milford Avenue Detroit, MI 48210	MID001868538	$44,780
Wyandotte Works 1609 Biddle Avenue Wyandotte, MI 48192	MID064197742	$121,100

2. The firm identified above guarantees, through the corporate guarantee specified in Subpart H of 40 CFR Parts 264 and 265, the closure and post-closure care of the following facilities owned or operated by its subsidiaries. The current cost estimates for the closure or post-closure care so guaranteed are shown for each facility: NONE.

3. In States where EPA is not administering the financial requirements of Subpart H of 40 CFR Parts 264 and 265, this firm is demonstrating financial assurance for the closure or post-closure care of the following facilities through the use of a test equivalent or substantially equivalent to the financial test specified in Subpart H of 40 CFR Parts 264 and 265. The current closure and/or post-closure cost estimates covered by such a test are shown for each facility:

Facility Address	EPA ID No.	Current Closure Cost Estimates
Dinuba Agricultural Station 10181 Avenue 416 Dinuba, CA 93618	CAT000646117	$25,160
Enka Works Sand Hill Road Enka, NC 28728	NCD052813250	$22,600
Agricultural Research Center P.O. Box 13528 Research Triangle Park, NC 27709	NCD139687974	$150,000
Clemson Works P.O. Box 488 Central, SC 29630	SCD052944295	$12,000
Whitestone Works P.O. Box 2108 Spartanburg, SC 29302	SCD077990638	$40,500
Freeport Works 602 Copper Road Freeport, TX 77541	TXD008081697	$558,300

Facility Address	EPA ID No.	Current Closure Cost Estimates
Williamsburg Works P.O. Drawer D Williamsburg, VA 23187	VAD990710642	$11,300
Huntington Works 24th St. & 5th Avenue Huntington, WV 27522	WVD000068601	$17,600

4. The firm identified above owns or operates the following hazardous waste management facilities for which financial assurance for closure or, if a disposal facility, post-closure care is not demonstrated either to EPA or a State through the financial test or any other financial assurance mechanisms specified in Subpart H of 40 CFR Parts 264 and 265 or equivalent or substantially equivalent State mechanisms. The current closure and/or post-closure cost estimates not covered by such financial assurance are shown for each facility: NONE.

5. This firm is the owner or operator of the following UIC facilities for which financial assurance for plugging and abandonment is required under Part 144. The current closure cost estimates as required by 40 CFR 144.62 are shown for each facility:

Facility Address	Well ID No.	Current Closure Cost Estimate
Geismar Works P.O. Box 457 Geismar, LA 70734	D-2A	$61,000
Holland Works 471 Howard Avenue Holland, MI 49423	MI-139-1W-0001	$16,000
Holland Works 471 Howard Avenue Holland, MI 49423	MI-139-1W-0002	$16,000
Freeport Works 602 Copper Road Freeport, TX 77541	WDW-51	$93,720
Freeport Works 602 Copper Road Freeport, TX 77541	WDW-99	$96,920

This firm is not required to file a form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends on December 31. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended December 31, 1986.

Closure or Post-Closure Care and Liability Coverage

ALTERNATIVE I
(000's)

1.	Sum of current closure and post-closure cost estimates (total of all cost estimates listed above)	$1,347
2.	Amount of annual aggregate liability coverage to be demonstrated	$30,000
3.	Sum of lines 1 and 2	$31,347
*4.	Total liabilities	$1,253,547
*5.	Tangible net worth	$881,477
*6.	Net worth	$922,971
*7.	Current assets	$1,142,440
*8.	Current liabilities	$739,317
9.	Net working capital (line 7 minus line 8)	$403,123
*10.	The sum of net income plus depreciation, depletion, and amortization (including amortization of capitalized interest of $7,548)	$438,428
11.	Total assets in U.S. (required only if less than 90% of assets are located in the U.S.)	N/A

		YES	NO
12.	Is line 5 at least $10 million?	X	
13.	Is line 5 at least 6 times line 3?	X	
14.	Is line 9 at least 6 times line 3?	X	
15.	Are at least 90% of assets located in the U.S.? If not, complete line 16.	X	
16.	Is line 11 at least 6 times line 3?	N/A	
17.	Is line 4 divided by line 6 less than 2.0?	X	
18.	Is line 10 divided by line 4 greater than 0.1?	X	
19.	Is line 7 divided by line 8 greater than 1.5?	X	

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR 264.151(g) as such regulations were constituted on the date shown immediately below.

Frederick W. Bernthal
Executive Vice President Finance
BASF Corporation
March 31, 1987